



draft

Rock Springs District



WILDERNESS

Environmental Impact Statement

NOTICE TO READERS

Please keep this draft EIS for possible use as part of the final EIS. Council on Environmental Quality regulations (43 CFR 1503.4(c)) provide for circulation of abbreviated final EISs where major changes to the draft are not required. If the public review requires only minor changes to the draft, then the final EIS will consist of this draft and a supplement containing public comments, responses to comments, and necessary changes and corrections. This procedure will cut printing costs and speed up the environmental process.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

State Office

P. O. Box 1828

Cheyenne, Wyoming 82001

IN REPLY
REFER TO:
1792 (931)

Dear Reader:

Enclosed is the draft environmental impact statement (DEIS) on 13 Rock Springs District wilderness study areas. The DEIS analyzes the environmental impacts of a proposed action (wilderness designation of two WSA's and nonwilderness management of 11 WSA's) and three alternatives to this action.

The purpose of this DEIS is to determine the probable environmental impacts that the proposed action or alternatives would have on natural resources, wilderness values, recreation opportunities, socioeconomic conditions, and on the management of public lands. This DEIS is an integral part of the Bureau's land use planning process. The analysis is based on information gathered during the intensive wilderness inventory as well as information supplied by State and local governments, private organizations, and interested individuals.

I would appreciate your review of this draft EIS. Comments will be accepted until close of business April 15, 1983. Please direct comments to:

Mr. Don Dutcher
Wilderness EIS Team Leader
P. O. Box 1869
Rock Springs, Wyoming 82901

A public hearing will be held on March 16, 1983, in Rock Springs at Western Wyoming College, Room C-204, at 7 p.m. Rock Springs District Office staff will be available, by appointment, prior to the public hearing to discuss the DEIS with any interested groups or organizations. Please contact Don Dutcher (307-382-5350) for an appointment.

We would encourage you to retain this document. If major revisions are not necessary, this draft EIS will form Volume I of the final environmental impact statement. Any additions or changes will be included in the final EIS. All testimony and written comments received during the public comment period will also be incorporated into the final EIS. Your participation in reviewing this document is appreciated as well as your continued interest in the management of public lands in Wyoming.

Sincerely yours,

Maxwell T. Lieurance
State Director

Enclosures

United States Department of the Interior



Division of Reclamation
Washington, D.C. 20006
May 1, 1955

Mr. J. Edgar Hoover
Federal Bureau of Investigation
Washington, D.C.

Dear Sir:

Enclosed for the Bureau are two copies of a letterhead memorandum (LHM) dated May 1, 1955, and captioned "Reclamation Division's Policy on the Release of Information to the Public". The LHM contains the Division's policy on the release of information to the public, and is being furnished to the Bureau for its information.

The LHM is being furnished to the Bureau for its information, and is not being furnished to the public. The LHM contains the Division's policy on the release of information to the public, and is being furnished to the Bureau for its information.

I am, Sir, very respectfully,
Very truly yours,
Director

Enclosure
Very truly yours,
Director

A copy of this LHM is being furnished to the Bureau for its information, and is not being furnished to the public.

The LHM is being furnished to the Bureau for its information, and is not being furnished to the public.

Very truly yours,

W. A. Rorer
W. A. Rorer
State Engineer

PUBLIC HEARING REGISTRATION FORM

For the public hearing on the Rock Springs District draft wilderness environmental impact statement.

To: Wilderness EIS team Leader, Bureau of Land Management, P. O.
Box 1869, Rock Springs, Wyoming 82901

From: Name _____
(Please print)

Street Address _____

City, State, Zip Code _____

Representing _____

I wish to offer testimony at the public hearing on March 16, 1983, in Rock Springs (Western Wyoming College, Room C-204, at 7 p.m.).

I intend to submit written documentation: Yes _____ No _____

I understand that registration forms may be submitted to the Rock Springs District Office before the close of business March 16, 1983, or presented at the registration desk before or during the public hearing. Verbal testimony will be limited to 10 minutes. Written testimony will be accepted by the EIS Team Leader at the above address until close of business April 15, 1983.

Signature _____

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BUREAU OF LAND MANAGEMENT DEPARTMENT OF THE INTERIOR

DRAFT ROCK SPRINGS DISTRICT WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

Located in the counties of Fremont, Lincoln, Sublette, and Sweetwater, Wyoming

Address inquiries and comments to:

Don Dutcher, EIS Team Leader
Bureau of Land Management
P.O. Box 1869
Rock Springs, Wyoming 82901
(307) 382-5350

This environmental impact statement analyzes the impacts that would result from wilderness or nonwilderness management of 13 Wilderness Study Areas (WSAs) in the Rock Springs District. The proposed action recommends wilderness designation of two WSAs: Sand Dunes (16,280 acres) and Honeycomb Buttes (41,620 acres). The three alternatives include: Alternative 1, maximize wilderness (wilderness designation of 13 WSAs); Alternative 2, moderate proposal (wilderness designation of 6 WSAs, nonwilderness management of 7 WSAs); and Alternative 3, minimize wilderness (non-wilderness management of 13 WSAs). This EIS includes a description of the affected environment as well as an analysis of possible environmental impacts.

Comments must be received by April 15, 1983.

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SUMMARY

PURPOSE

The purpose of this environmental impact statement (EIS) is to assist in determining the suitability of 13 BLM wilderness study areas (WSAs) in Southwest Wyoming for inclusion in the National Wilderness Preservation System. This study is in response to Section 603 of the Federal Land Policy and Management Act of October 21, 1976, which directed the Bureau of Land Management to inventory, study, and report to the Congress, through the Secretary of the Interior and the President, those public lands suitable for wilderness preservation. Congress will make the final decisions on areas to be designated wilderness. Chapter 1 of the District-wide Analysis contains additional details on the BLM wilderness study process and how the process was administered in the Rock Springs District.

ALTERNATIVES ANALYZED

This EIS analyzes the environmental impacts of managing the Rock Springs District WSAs as wilderness or nonwilderness, as contained in a proposed action and three alternatives. The proposed action recommends wilderness designation for the Honeycomb Buttes WSA and a portion (16,280 acres; approximately 60 percent) of the Sand Dunes WSA. The remaining portion of Sand Dunes WSA (10,920 acres) and the other 11 WSAs would be managed as nonwilderness, for other multiple-use objectives.

Alternative 1 proposes wilderness designation for all 13 WSAs. Alternative 2 proposes wilderness designation for six WSAs (Raymond Mountain, Sand Dunes, Honeycomb Buttes, Oregon Buttes, Whitehorse Creek, and Devils Playground-Twin Buttes), and nonwilderness management for the remaining WSAs. Alternative 3 proposes non-wilderness management for all 13 WSAs.

ISSUES

Key issues addressed in this EIS include wilderness values that might add to the diversity of the National Wilderness Preservation System;

energy potential (primarily oil and gas); wildlife values; manageability of the WSAs as wilderness, especially in light of oil and gas leasing constraints; other resource conflicts with wilderness management; and very importantly, public attitudes toward wilderness on public land in Wyoming.

The energy issue strongly influenced the wilderness decision making process in Southwest Wyoming. The WSAs are encumbered by oil and gas leases, many of which are pre-FLPMA and have inherent valid existing rights. The current level of exploration, development, and production in the region, combined with the moderate to high potential for oil and gas development in many of the WSAs, led to the assumption that the lessees would exercise most of their rights, especially when a WSA was proposed for wilderness designation. It is only reasonable to assume that oil and gas companies would exercise their mineral development rights, prior to lease termination, and extend leases in accordance with current Minerals Management Service and BLM procedures. This is expected to result in significant amounts of oil and gas activity, regardless of wilderness designation. Thus, the potential impacts of oil and gas development would be very similar for each alternative and constitute the major impacts expected under each alternative. The WSAs have valid claims for their mineral resources, and this causes a similarity of impacts between wilderness and nonwilderness alternatives.

SUMMARY OF IMPACTS

Under the proposed action minor adverse impacts would occur to natural resources (air quality, water resources, soils, vegetation, etc.), but moderately beneficial impacts would occur to the regional economy (largely the oil and gas industry). Nearly all of the oil and gas resources could be extracted from the WSAs. Seasonal or other restrictions would be applied to protect key values such as wildlife. The proposed action and Alternative 3 would have the most beneficial impacts to the oil and gas industry, the livestock industry, and the timber industry. However, they would have the most adverse effects on wilderness values.

Alternatives 1 and 2 would be the most beneficial for wilderness values, but wilderness values would still decline, due to anticipated oil and gas activities. Alternative 1 (maximize wilderness) is the only alternative that would have a slightly adverse impact on recreation opportunities in the district. Most recreation use in the region is motor vehicle-dependent and although wilderness designation may increase non-motorized recreation, it would not offset the overall loss of vehicle-dependent recreation (hunting, off-road vehicle, etc.). Alternatives 1 and 2 would have the least beneficial impact on socioeconomic conditions, due to restrictions on oil and gas development and eventual elimination of exploration and development opportunities when leases expire. However, some development would take place even under Alternative 1.

(See Table D-16 page 77.)

PREFERRED ALTERNATIVE

The BLM preferred alternative is the proposed action because it allows the greatest socioeconomic benefits while preserving unique values for future generations. It offers overall benefits to the economy commensurate with Alternative 3 (minimize wilderness), yet still affords opportunities for realistic wilderness preservation in areas where oil and gas and other activities would be minimal. It does not decrease recreation opportunities in the district. It reduces impacts to natural resources to a minimum. It considers public input, especially from Wyoming residents, indicating that few if any of BLM WSAs should be designated wilderness.

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CHAPTER 1

DESCRIPTION OF THE ALTERNATIVES INCLUDING THE PROPOSED ACTION

PURPOSE AND NEED

The purpose of the proposed action is to recommend to the President, via the Secretary of the Interior, the public lands in the Rock Springs District, Wyoming, that are suitable or unsuitable for wilderness; to identify any conditions unique to the respective area; and to offer alternatives to wilderness designation. The action is needed to comply with the provisions of Section 603 of the Federal Land Policy and Management Act of October 21, 1976, (FLPMA), which requires an inventory and review of all public lands under the jurisdiction of the Bureau of Land Management (BLM) for wilderness potential and a suitability study of those public lands with identified wilderness values.

This analysis will address the impacts of both designation and nondesignation of wilderness areas. The analysis of nondesignation is required by BLM's wilderness study policy (*Federal Register* Vol. 47, No. 23, 5098-122, 3 February 1982). Impacts of nondesignation that are addressed concern the possible loss of diversity to the National Wilderness Preservation System (NWPS) and to identified values such as naturalness, opportunities for primitive recreation and solitude, and supplemental values (e.g., wildlife, unique geology, or vegetation).

The level of detail of each site-specific analysis will vary in accordance with the amount of information available for each Wilderness Study Area (WSA). Each WSA, as shown on Map D-1, was studied at varied levels of detail corresponding to the amount of public interest and resource issues. Consequently, the Overthrust Belt WSAs, Lake Mountain and Raymond Mountain, contain the most detailed analysis with regard to mineral potential, recreation potential, wildlife, and other resource values. Five other WSAs (Sand Dunes, Honeycomb Buttes, Oregon Buttes, Whitehorse Creek, and Devils Playground-Twin Buttes) were recognized by the public and BLM as having considerable public value and were studied at a moderate level of detail. BLM mineral reports were prepared on these WSAs, based on both mineral

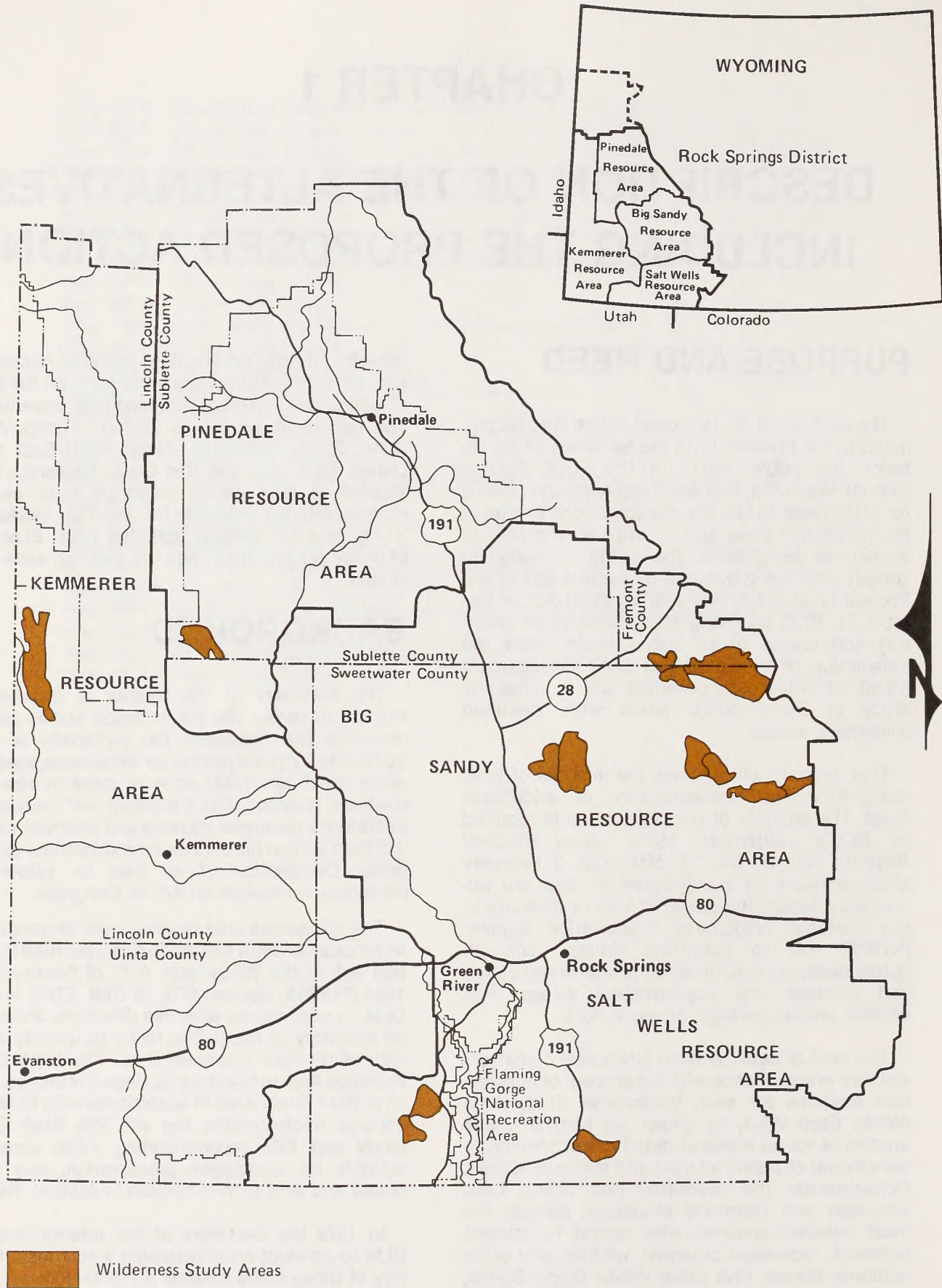
industry information and BLM analysis. Recreation use and other values were estimated, on the basis of wilderness inventory data and field observation. The remaining six WSAs (Buffalo Hump, Alkali Draw, South Pinnacles, Alkali Basin-East Sand Dunes, Red Lake, and Red Creek Badlands) were studied in less detail. Although BLM mineral reports were not prepared for these six WSAs, existing data on mineral potential from BLM and Minerals Management Service sources were considered.

BACKGROUND

The Secretary of the Interior is directed by FLPMA to review the public lands and to recommend to the President the suitability or non-suitability for preservation as wilderness, roadless areas which are 5,000 acres or more in size (and roadless islands). The President will review the Secretary's recommendations and alternatives and will then submit his own recommendations to Congress. Designation of an area for wilderness preservation requires an Act of Congress.

The wilderness area review "shall be conducted in accordance with the procedure specified in Section 3(d) of the Wilderness Act" of September 3, 1964 (FLPMA, Section 603, 90 Stat. 2785) In 1978 BLM, in accordance with this direction, undertook an inventory of the public lands to identify areas with wilderness characteristics. The Scab Creek Primitive Area in the Rock Springs District became an Instant Study Area in accordance with BLM procedures implementing the act. The Scab Creek study and EIS, recommending 7,636 acres as suitable for wilderness preservation, was completed and sent to Washington in April of 1981.

In 1979 the Secretary of the Interior directed BLM to conduct an accelerated wilderness inventory of those lands located in the Overthrust Belt. In 1980, BLM completed its regular inventory of the remaining public lands in the Rock Springs District. Thus, BLM's identification of WSAs for further consideration as wilderness was made at three different times: (1) In 1978 when the single Wyoming Instant Study Area was designated



Map D-1
GENERAL LOCATION MAP
Rock Springs District Wide
Wilderness Environmental Impact Statement

DISTRICT-WIDE ANALYSIS

(Scab Creek); (2) in 1979 when the accelerated inventory of the Overthrust Belt was completed; and (3) in 1980 when the regular inventory of the remaining public lands was completed.

The 1979 accelerated inventory of the Overthrust Belt considered seven inventory units totaling 83,366 acres. Of these seven, five were dropped from further consideration, leaving two WSAs, Lake Mountain and Raymond Mountain, totaling 46,906 acres, to further consider for wilderness. Appeals on the BLM decisions for Lake Mountain, Raymond Mountain, Coal Creek, and IGO Speedway (i.e., four of the seven inventory units), were filed with the Interior Board of Land Appeals (IBLA). In 1982 the IBLA supported BLM's decision to drop Coal Creek and IGO Speedway. Previous IBLA decisions supported BLM's further consideration of Lake Mountain and Raymond Mountain for wilderness.

The 1980 inventory considered 33 inventory units. Of these 33 units, totaling 424,333 acres, 14 consolidated and reduced WSAs, totaling 225,780 acres, were identified for further study. Appeals to IBLA were filed on the BLM decisions for the Sand Dunes, Adobe Town, and Alkali Draw WSAs. The Sand Dunes appeal was dismissed for failure of the appellant to file a statement of reasons; the Adobe Town appeal was denied; and the Alkali Draw appeal is still pending before the IBLA as of October 1982. The Wyoming BLM published a final report, *Wyoming Wilderness Study Areas, A Final Inventory Report*, in May 1981. That report is available at all Wyoming BLM offices. It outlines the final WSAs selected for study in the state and district. The public involvement procedures used throughout the study process are discussed in Chapter 4 of this EIS.

In summary, 16 study areas and one Instant Study Area were identified in the Rock Springs District. The Instant Study Area (Scab Creek) recommendation has been submitted to the Secretary of the Interior. Thirteen WSAs (including the two Overthrust WSAs) are considered in this document. Two small WSAs (East Fork and Mill Creek) adjacent to National Forest lands, are dependent upon Congressional action on the Forest Service's Rare II wilderness proposals. The remaining WSA, Adobe Town, is located in both the Rock Springs and Rawlins Districts. It will be addressed in the Overland/Divide wilderness study and EIS to be completed by the Rawlins District during 1983.

Each WSA was determined to have wilderness characteristics as defined in the Wilderness Act (1964). That is a prerequisite to the Secretary's determination of the suitability or unsuitability of a WSA for wilderness preservation; which, in accordance with FLPMA, must be based on the area's wilderness value in comparison to its value for other resource uses.

Section 2(c) of the Wilderness Act defines wilderness as:

A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this act an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

BLM Wilderness Management Policies

In 1979 the Bureau established an interim management policy and guidelines for lands under wilderness review, covering (1) lands for which the inventory process had not been completed and (2) WSAs. The draft interim management policy and guidelines for WSAs were released for public review in January 1979 and the policy and guidelines for both categories were published in December 1979. The policy establishes nonimpairment criteria which attempt to protect wilderness values until final wilderness decisions are reached by the President and Congress.

DISTRICT-WIDE ANALYSIS

Nonimpairment criteria for activities occurring in the WSAs are: (1) the use or activity is temporary; (2) any temporary impacts of the use or activity must be reclaimable to a substantially unnoticeable condition at the time the Secretary makes his recommendation to the President; and (3) when the activity or use has been terminated and reclamation completed, the area must not have been degraded to a point where the Secretary would feel constrained in recommending the area for wilderness. Exceptions to the nonimpairment criteria are certain mineral and grazing activities that were in effect or allowed prior to FLPMA (pre-FLPMA valid existing rights).

These pre-FLPMA rights, primarily oil and gas leases, have severely limited BLM's option of managing most of the Rock Springs District WSAs primarily for wilderness values in the long term (50 years). However, this does not mean that wilderness management in the very long term (50 to 100 years), even in areas that experience development, is not a possibility for the district WSAs. Wilderness is "not entirely free of marks of mankind but (is) fully capable of providing, in the long term, wilderness benefits to many people" (Committee on Interior and Insular Affairs 1978). This refines the original words of the 1964 Wilderness Act, Section 2(c), defining wilderness as areas where "the imprint of man's work is substantially unnoticeable."

Wilderness management in most Rock Springs WSAs is constrained by long-term pre-FLPMA rights. However, the wilderness management mandates of law have not been overlooked or ignored because of these limitations.

One final management aspect involves the federal capability to manage BLM wilderness, or even nonwilderness. A major assumption used in the analysis is that adequate staffing would be available to properly manage wilderness or other special management areas. The assumption is significant in that without the capability to properly implement the management plan (wilderness, Area of Critical Environmental Concern (ACEC), or any other) there is no real difference among alternatives.

Implications To Other Management Practices

Other BLM management practices would generally not constrain nor be constrained by wilderness management (see Table D-1). These in-

clude such activities as helicopter use for wild horse roundups, rescue operations, scientific experimentation, etc.

Wilderness management can, therefore, embrace many activities not normally associated with wilderness. They may temporarily affect the wilderness experience for some users, but are, of necessity, an integral part of specific wilderness area management. "Anything necessary for the protection of the public health or safety is clearly permissible in wilderness areas" (Committee on Interior and Insular Affairs 1978). This and other interpretations provide for discretionary federal activities in wilderness areas within the bounds of common sense and law.

The effect of wilderness management on livestock grazing has been misunderstood. Clearly, under wilderness management, livestock grazing would continue. Several Congressional reviews of wilderness legislation have especially emphasized this, more recently in the Central Idaho Wilderness Act of 1979 (Committee Report):

When enacting legislation classifying an area as wilderness, it has been the intent of the Congress, based on solid evidence developed by testimony at public hearings, that the practical language of the Wilderness Act would apply to grazing within wilderness areas administered by all federal agencies, not just the Forest Service. In fact, special language appears in all wilderness legislation, the intent of which is to assure that the applicable provisions of the Wilderness Act, including Section 4(d)(4)(2), will apply to all wilderness areas, regardless of agency jurisdiction.

Pre-FLPMA Leases And Valid Existing Rights

Leases granted prior to passage of the Federal Land Policy and Management Act of 1976 (FLPMA) are referred to as pre-FLPMA leases. Post-FLPMA leases are those leases granted after the passage of FLPMA. Pre-FLPMA leases have important valid existing rights which are not inherent in post-FLPMA leases, in regards to development of the leases. Post-FLPMA leases will be managed under the non-impairment criteria of the Interim Management Policy.

DISTRICT-WIDE ANALYSIS

Table D-1
IMPLICATIONS OF WILDERNESS AND NONWILDERNESS MANAGEMENT IN THE ROCK SPRINGS DISTRICT

Environmental Elements	Wilderness Management	Nonwilderness Management ^{1/}
Climate	N/A	N/A
Air Quality	Would maintain existing air quality (usually Class II). Wyoming DEQ would monitor.	Air quality dependent upon approved activities.
Topography	Would maintain existing topography.	Possible minor change if surface disturbing activities approved.
Geology Mineral Leasing/Development	Would minimize extraction. Exploration/leasing/development allowed with limitations until 1984. Exploration limited by not allowing motorized vehicles. Existing leases require reasonable stipulations; leases would generally not be renewed upon expiration. All WSAs have existing and pre-FLPMA leases. Stipulations on pre-FLPMA leases could only be applied on a voluntary basis. Mining would be allowed with mitigation measures applied to prevent degradation. Although mitigation measures could not be applied that would cause the mining operation to become uneconomical.	Would allow extraction if mineral entry approved.
Paleontological Resources	Would minimize/eliminate excavation of fossil records. Case-by-case basis for action.	Would allow extraction of paleontological resources.
Soils	Would generally allow continued natural changes rather than manmade changes.	Probably increase erosion potential in areas where disturbing activities are approved.
Water Resources	Maintain natural water quality and quantity. In the Overthrust WSAs this would maintain high quality and the quantity of water. In Red Creek Badlands WSA, high sediment loads would be reduced through ACEC management prescriptions. Present Interior policy reserves water rights to the state with the exception of developed structures/facilities. No new water facilities would be allowed unless approved by the President.	Possibly promote a decline in water quality and quantity. The ephemeral waters (some springs) would be unprotected in most WSAs. Water quality in the Red Creek Badlands WSA would improve due to ACEC management prescriptions.
Vegetation	Would provide some protection from destruction/degradation, but grazing would continue. Little increase in forage production would be expected. Natural succession of vegetation would continue.	Possible decrease in vegetation depending upon approved activities such as roads, site development, etc.
Timber Resources	Timber removal (Overthrust WSAs) eliminated. Visitor use of firewood would continue.	Insect/disease suppression measures would generally be allowed. Timber harvest would be allowed.
Fire Management	All fires would be controlled to prevent loss of human life or property within wilderness areas or to prevent the spread of fire to areas outside of the wilderness where life, resources, or property may be threatened, in accordance with the fire management prescriptions of the resource area fire management plan. Human-caused wildfire would be prevented and/or controlled unless the fire meets wilderness fire management prescriptions of the resource area fire management plan. Natural fire would generally be allowed to burn, but only in conformance with the approved fire management plan and the life and property criteria above.	Suppression of fires would depend on whether natural resources would benefit and whether human life or property is threatened. Suppression is determined by the prescriptions of the approved resource area fire management plan.

DISTRICT-WIDE ANALYSIS

Table D-1
(Continued)

Environmental Elements	Wilderness Management	Nonwilderness Management ^{1/}
Wildlife		
Terrestrial	Would promote habitat protection and limit human intrusions; wildlife would generally benefit. Hunting would still be allowed, but no motor vehicles would be permitted. Would protect key calving, wintering areas. Predator control limited; would be examined on a case-by-case basis.	Habitat quality would probably decline; wildlife development would be limited. Would promote use of vehicles for hunting. Would allow other conflicting activities.
Aquatic	In Overthrust WSAs, where aquatic wildlife is present, natural conditions supporting preservation of the wildlife would continue. Fishing would continue as prescribed by the Wyoming Game and Fish Department.	Possibly allow destruction or degradation of aquatic habitat supporting trout and other aquatic wildlife. However, ACEC designations in the Overthrust area would offer similar protection as wilderness designation because of the wildlife emphasis.
Wild Horses	Wild horses would be managed the same as under nonwilderness management. Horse traps could be located in the WSA with specific BLM permission and restrictions.	Basically the same as wilderness management. Horse trap would be located inside former WSA area; access road to trap and any necessary facilities could be constructed.
Livestock Grazing	Would continue if existed prior to designation. Change of use and improvements could be allowed if wilderness values would not be impaired. Restrictions on motor vehicle use.	Would continue present practices, or motor vehicle restrictions in most areas; changes in use or improvements approved by usual BLM procedures.
Wilderness Values	Would be protected. Values preserved include naturalness, opportunities for solitude or primitive recreation and "special features." WSAs would add to diversity of the NWPS. Restoration of man-caused damage. No wilderness administrative or other facilities proposed for this district. If designation increases visitor use, some of the wilderness values would be impacted.	Probably not managed for these values, allowing major human activities, disruption to naturalness, solitude, etc.
Recreation Opportunities	Would provide only primitive recreation opportunity; limit all other.	Would allow other forms of recreation such as ORV use in Sand Dunes, 4x4 hunting, other motorized and nonprimitive recreation.
Cultural Resources	Would protect archeological and historical sites, but severely restrict further recovery of artifacts.	Still protected by law on public lands.
Visual Resources	Would be protected as integral part of wilderness experience under VRM Class I designation.	Probably allow visual intrusions with some mitigation measures employed at best.
Land Use Constraints Administrative/Commercial Facilities, Special Uses	No facilities are proposed in the WSAs at present, but could be considered if wilderness values would be complemented. No additional roads would be constructed, but additional trails are possible. Air traffic may continue where previously established. Access to non-Federal lands allowed. Coordination/exchange of state lands within WSA will occur. Use capacity will be determined and visitor use could be limited in long term (not likely in this district within 20-40 years). Special uses considered on case-by-case basis with the key consideration being the impacts these uses might have on the wilderness values of the area. Limits of acceptable change will be defined in the wilderness management plan for each wilderness area.	Facilities construction would be allowed but it is generally not applicable in most cases. Access, motor vehicle use allowed.
Socioeconomic Conditions Local Economy	Could be enhanced if wilderness attracted additional recreationists. Reduction of some economic producers (oil and gas, etc.).	Would be a strong factor in determining management of the resources.
Regional Social Values	Would generally shape the kinds of activities allowed, camping areas, etc. No activities threatening the wilderness values would be allowed after designation.	Would be a strong factor in determining appropriate management of the nonwilderness area.

^{1/} The implications for nonwilderness management are described as "possible" or "probable" because alternative management may include some of the same features as wilderness management. An ACEC, for example, may protect certain resources as well as wilderness designation, depending on the ACEC management plan. However, nonwilderness management could also embrace minimal protective measures allowing "maximized development."

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Pre-FLPMA leases greatly constrain what BLM can require of the lessee. Prior to drilling or development on the lease, BLM will review the lease stipulations and measure these existing stipulations against the nonimpairment criteria in BLM's Interim Management Policy (i.e., criteria designed to protect the wilderness values of the WSA). A determination must be made and documented as to whether the proposed activity would impair the wilderness values. If it would, BLM must attempt to bring the activity into compliance with the nonimpairment criteria. If compliance with the nonimpairment criteria would unreasonably interfere with development under the lease rights, BLM must allow the activity. However, pre-FLPMA lease activities must meet the "nondegradation requirements" as specified in the final BLM Wilderness Management Policy (*Federal Register* Vol. 46, No. 185, 47180-205, 24 September 1981). Surface disturbance must not be greater than what would normally result when an activity is being accomplished by a prudent operator.

Pre-FLPMA lease rights greatly affect the manageability of a WSA. BLM must rely on voluntary compliance with nonimpairment criteria by pre-FLPMA lessees and cannot guarantee the public a pristine wilderness experience in any designated wilderness for the short term or even long term.

There are many methods whereby the valid existing rights of pre-FLPMA lessees can be extended in areas with any oil and gas potential or major lessee interest. Many people not familiar with the extensive oil activity in Wyoming, find it difficult to understand that many, if not most, pre-FLPMA leases will not expire at the end of 10 years. Leases on much of the public land in the Rock Springs District are too valuable for lessees to allow them to expire.

Leases on which a discovery is made can be extended indefinitely, e.g., to 50 years, to allow complete development of the oil or gas field. Leases which appear promising, but have not been drilled, can be extended through new efforts at exploration, near the end of the ten-year lease. The leasing company, by itself or with other companies, can "unitize for exploration" and can extend leases from 3 to 10 years, depending upon company compliance with federal regulations. Leases commonly cover more than one parcel of land, and are not always contiguous to each other. If production can be shown on one parcel (e.g., outside a WSA), the

remaining parcels under the same lease are extended for an indefinite period, along with the producing parcel. Therefore, leases would not expire and wilderness manageability could not be restored in areas where any oil and gas potential exists.

The importance of pre-FLPMA oil and gas leases and other valid existing rights as they apply to BLM's wilderness management cannot be overemphasized. Pre-FLPMA leases, in particular, greatly constrain what can be done under BLM wilderness management; because between 50 to 96 percent of most district WSAs have been pre-FLPMA leased for oil and gas.

Other constraints on BLM wilderness management, such as valid existing grazing rights associated with grazing privileges; state and private inholdings; and other activities which may be permitted under the BLM Wilderness Management Policy, are not as significant as the oil and gas development rights in the WSAs.

PROPOSED ACTION

The Bureau of Land Management proposes to recommend two WSAs (reduced boundary Sand Dunes and Honeycomb Buttes), containing 57,900 acres, as suitable for wilderness preservation by Congress. BLM proposes multiple-use management for 11 WSAs and the remaining portion of the Sand Dunes WSA not recommended for wilderness, totaling 160,281 acres.

The proposed action is a composite of the wilderness/nonwilderness decisions contained in the Management Framework Plans (MFPs) of the Rock Springs District's four resource areas (see Table D-2). By BLM policy (Washington Office Instruction Memorandum 82-595), the MFP decisions on nonsuitable WSAs are "final recommendations." Conversely, the MFP decisions recommending wilderness designation of two WSAs are "preliminary suitable recommendations awaiting the results of the Geological Survey/Bureau of Mines mineral surveys." The MFP decisions are based on the BLM wilderness suitability criteria (*Federal Register* Vol. 47, No. 23, 5098-122, 3 February 1982). The key MFP decisions are tabulated in Table D-3.

If the Sand Dunes and Honeycomb Buttes WSAs are designated by Congress as wilderness, they would be managed under the guidelines of the

DISTRICT-WIDE ANALYSIS

Table D-2

WILDERNESS PROPOSED ACTION AND ALTERNATIVES

Wilderness Study Area	Acres	Proposed Action 1/ 2	Alternative 1 (Maximize Wilderness) 1/ 2	Alternative 2 1/ 2 (Minimize Wilderness) 1/ 2	Alternative 3 (Minimize Wilderness) 1/ 2
<u>Pinedale Resource Area</u>					
Lake Mountain	13,970	No	Yes	No	No
<u>Kemmerer Resource Area</u>					
Raymond Mountain	32,936	No	Yes	Yes	No
<u>Big Sandy Resource Area</u>					
Buffalo Hump	10,300	No	Yes	No	No
Sand Dunes	27,200	Yes-(Reduced boundaries-16,280 acres)	Yes (27,200 acres)	Yes (27,200 acres)	No
Alkali Draw	16,990	No	Yes	No	No
South Pinnacles	10,826	No	Yes	No	No
Alkali Basin-East					
Sand Dunes	12,800	No	Yes	No	No
Red Lake	9,515	No	Yes	No	No
Honeycomb Buttes	41,620	Yes	Yes	Yes	No
Oregon Buttes	5,700	No	Yes	Yes	No
Whitehorse Creek	4,028	No	Yes	Yes	No
<u>Salt Wells Resource Area</u>					
Devils Playground -					
Twin Buttes	24,276	No	Yes	Yes	No
Red Creek Badlands	8,020	No	Yes	No	No

1/ Yes or no indicates whether or not the WSA is recommended for wilderness designation under the proposed action or alternatives.

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final BLM Wilderness Management Policy and the provisions of the Wilderness Act of 1964.

ALTERNATIVES

The three alternatives to the proposed action are composites of wilderness/nonwilderness designations that range from recommending all areas for wilderness to recommending no areas for wilderness. Alternative 1 is the maximize wilderness alternative which proposes that all WSAs be designated wilderness. Alternative 2 is a moderate alternative that proposes more wilderness than the proposed action but less than Alternative 1. Alternative 2 was developed in response to public requests to include more wilderness in a moderate alternative. Alternative 3 is a minimize wilderness alternative (no action alternative) which proposes that no WSAs be designated wilderness. This required "No Action Alternative" is a continuation of present BLM management without wilderness considerations. Under this alternative, WSA management would reflect the resource area's land use decisions (MFP) (see Table D-3), but not wilderness management. Table D-2 is a summary of the wilderness/nonwilderness designations comprising each alternative.

The proposed action and alternatives include other specific management of unique values within those areas considered unsuitable for wilderness. Specific considerations for each WSA are discussed in the site-specific analyses. They include possible off-road vehicle (ORV) limitations, ACEC designations with prescribed management to protect values unique to the area, and other special management suited to the needs of the area.

ALTERNATIVES DROPPED FROM FURTHER CONSIDERATION

Two alternatives, "no BLM management" and previous BLM management based on outdated Management Framework Plans, were dropped from further consideration. These alternatives were considered unreasonable and were not in accordance with the objectives of the National Environmental Policy Act of 1969.

PREFERRED ALTERNATIVE

The preferred alternative is the proposed action. The selection of the preferred alternative was made after the completion of the environmental analysis of the alternatives. The rationale for selecting the proposed action as the preferred alternative is presented at the end of the District-wide Analysis, Chapter 3, and is supported by a comparative analysis of the environmental effects of the alternatives.

This EIS analyzes two extreme alternative actions (all wilderness and no wilderness) one moderate alternative, and a moderate proposed action. The range presented by the three alternatives and the proposed action is believed to be adequate to determine the impacts and significant differences of wilderness/nonwilderness designation. Each WSA is analyzed for the impacts of wilderness and nonwilderness designation on a site-specific basis. The cumulative impacts of any of the three alternatives and the proposed action presented in this EIS are the total of the site-specific impacts. Additional alternatives could be considered because the site-specific analyses provide sufficient information to determine cumulative impacts. This will allow selection of any combination of wilderness/nonwilderness designations if necessary.

INTERRELATIONSHIPS WITH LAND USE PLANNING

BLM Planning

All 13 WSAs were studied in a wilderness study process as an integral part of the 1981 planning for the four resource areas in the district. Every WSA was recommended as either suitable or non-suitable for wilderness, with the exception of the Sand Dunes WSA, which was recommended as partially suitable. These recommendations were based on the wilderness study. The recommendations are described in detail in the following MFPs: the Sublette MFP in the Pinedale Resource Area, the Pioneer Trails MFP in the Kemmerer Resource Area, the Big Sandy MFP in the Big Sandy Resource Area, and the Salt Wells MFP in the Salt Wells Resource Area (see Map D-1). Table D-3 con-

DISTRICT-WIDE ANALYSIS

Table D-3

MPP DECISIONS AFFECTING ROCK SPRINGS DISTRICT WILDERNESS STUDY AREAS 1/

Resource Area and MPP Decision	WSA(s) Affected	MFP Multiple-Use Recommendation	Discussion
Piedale WL-1.1	Lake Mountain	Designate the entire Rock Creek watershed an Area of Critical Environmental Concern (ACEC). (Detailed MPP decisions on the Lake Mountain WSA are addressed in the site-specific analysis.)	One of the potential threats to aquatic habitat and to the Colorado River cutthroat trout is future oil and gas development in the Rock Creek drainage. Road and well site construction within the watershed would lead to increased siltation, physical damage to the stream, and possible contamination from spills. Any or all of these would result in subsequent degradation of the aquatic resource. Uncontrolled DRV use or timber harvesting could also cause the same impacts on a reduced scale. The ACEC designation would complement the management goals of the Wyoming Game and Fish Department by protecting the habitat of the Colorado River cutthroat trout, a species designated rare by this agency. (A wilderness designation MFP recommendation for Lake Mountain WSA was not developed by the Recreation Specialist. Consideration of the entire WSA or a portion of the WSA for wilderness was not considered to be an appropriate MFP recommendation based on the application of the wilderness study criteria and because the Rock Creek drainage (the only WSA portion having high quality wilderness values--5,200 acres) does not offer significant diversity to the wilderness system in the region. Its small size greatly reduces the wilderness manageability.)
Kemmerer WLA-1.1	Raymond Mountain	Designate a portion of the Thomas Fork drainage an ACEC. (Detailed MPP decisions on the Raymond Mountain WSA are addressed in the site-specific analysis.)	The designation of the Thomas Fork drainage as an ACEC would ensure that the aquatic habitat would receive the management consideration necessary to maintain habitat suitable for the continued survival of the Bonneville or Bear River cutthroat trout (<i>Salmo clarki</i> Utah).
Kemmerer R-1.1	Raymond Mountain	Do not recommend the Raymond Mountain WSA as wilderness.	Economic loss would result with a wilderness designation due primarily to closure to mineral exploration and development in the area after lease expiration. This would create an adverse social impact since there is little local public support for wilderness, and many support the national concern for energy exploration and development. The primary user group is from the surrounding area and participates in picnicking, camping, and hunting. A wilderness designation would probably not attract many others to the area since there are more scenic and nationally well-known parks and forests in the region. A wilderness designation is contrary to the interests of the local users.
Big Sandy R-1.5	Sand Dunes and Buffalo Hump	Identify lands described as the Greater Sand Dunes as an Area of Critical Environmental Concern (ACEC).	The Greater Sand Dunes area has scenic, natural, wildlife, and cultural values that should be preserved. The nomination of this area as an ACEC may mean protective stipulations and administrative closure for minerals, limited access for off-road vehicles, possible designation as a natural area, and patrol and detection for degradation of cultural resources. (At present, there are no mining claims in the subject area. There are, however, existing oil and gas leases.) In order to minimize access and inholding problems and to simplify management of this area, it may be desirable to develop cooperative agreements or to obtain scenic easements on the private lands. The recommendation would conflict with lands and minerals if it restricts or prohibits development.
Big Sandy R-1.6	Oregon Buttes	In order to protect their natural values, identify lands including the Oregon Buttes as a cultural Area of Critical Environmental Concern (ACEC).	The Oregon Buttes area has scenic, wildlife, natural, and historical values. As an ACEC, stipulations would be applied to protect the area from damage caused by mineral development as well as from damage caused by large groups of people attracted by the buttes' history and beauty. The historical and scenic values of this area need protection despite inevitable restrictions on lands actions and mineral development.
Big Sandy R-10.1	Sand Dunes	Identify part of the Sand Dunes WSA, as shown on Map SD-1 as suitable for wilderness designation.	The Sand Dunes WSA is an outstanding example of a cold desert sand dune ecosystem. It meets all the basic criteria for wilderness. It would add to the National Wilderness Preservation System an ecosystem that is not presently represented. The Sand Dunes WSA contains a large number of pre-PLPMA oil and gas leases. These existing leases plus the discovery of natural gas in the southeast corner of the WSA cast some doubt on the manageability of the area. The intensive minerals report indicates that the natural gas reserves present in the southeast corner probably decrease or are not present west of the existing gas wells.
Big Sandy R-10.3	Honeycomb Buttes, Whitehorse Creek, and Oregon Buttes	The Honeycomb Buttes WSA is recommended for wilderness designation. The Oregon Buttes and Whitehorse Creek WSAs are not recommended as suitable for wilderness.	Honeycomb Buttes meets all wilderness criteria. It would add an example of an ecosystem different from any found in the designated wilderness areas of the region. Oregon Buttes has numerous manmade intrusions, but has historical values that should be preserved. Whitehorse Creek does not meet the minimum acreage requirements.

DISTRICT-WIDE ANALYSIS

Table D-3
(Continued)

Resource Area and MFP Decision	WSA(s) Affected	MFP Multiple-Use Recommendation	Discussion
Big Sandy R-11.1	Buffalo Hump	The Buffalo Hump WSA is not recommended for wilderness designation.	<p>The Buffalo Hump WSA meets all the basic requirements for wilderness. Wilderness designation would provide increased protection to the wilderness values as well as other resources. The area is entirely public land which would simplify management. The area has pre-FLPMA oil and gas leases on about half of the area which increases management difficulty.</p> <p>The public comments are generally supportive of preserving active sand dunes but only a small number exist within Buffalo Hump. Impacts of either wilderness designation or redesignation to the local and regional socioeconomic conditions would be insignificant.</p> <p>There has been almost no interest to date in oil and gas exploration within the WSA. It is not anticipated that a nonwilderness designation will have much impact on other resource values.</p> <p>The designated wilderness areas in the region are not similar to the ecosystem of Buffalo Hump. However, the Sand Dunes WSA, which is recommended for wilderness, better represents this ecosystem.</p>
Big Sandy R-11.2	Alkali Draw and South Pinnacles	The recommendation that the Alkali Draw and South Pinnacles WSAs are not suitable for wilderness is accepted.	<p>Alkali Draw and South Pinnacles meet the basic requirements for wilderness. The areas are open sagebrush-grass ecosystems with relatively flat topography. These characteristics limit the opportunities for wilderness experiences. Pre-FLPMA oil and gas leases which are on most of the area increase management difficulties.</p> <p>There have been a limited number of public comments in support of these two areas. Most interest seems to be in the pinnacle formations themselves.</p> <p>There have been significant natural gas discoveries on the west boundary of Alkali Draw in recent months. It appears there will be more drilling on pre-FLPMA leases in the Alkali Draw WSA. While the areas would add some diversity to the wilderness system, they are typical of hundreds of thousands of acres of western rangeland.</p> <p>It appears there would be little difference in the impacts that would occur if a wilderness recommendation is made. The large number of pre-FLPMA oil and gas leases combined with recent discoveries make it likely that wilderness value may be difficult to retain.</p>
Big Sandy R-11.3	Alkali Basin-East Sand Dunes and Red Lake	The recommendation that Alkali Basin-East Sand Dunes and Red Lake WSAs are not suitable for wilderness is accepted.	<p>Alkali Basin-East Sand Dunes and Red Lake WSAs meet the basic requirements for wilderness. These areas are relatively narrow (1-2 miles) but long (14 miles) strips of the Killpecker Sand Dunes. The contrast between sand and the surrounding vegetation provides an easily distinguished boundary. The narrowness limits wilderness experience opportunities because of the nearness of developed sites, noise, and the visibility of man's activities outside the area. Pre-FLPMA oil and gas leases on approximately half the area would increase management difficulties.</p> <p>Public comments support preservation of the Killpecker Sand Dunes. Overall support for other wilderness designation is low. There has been some oil and gas activity in the vicinity of the WSAs. There were some dry holes drilled within the WSAs in the past. It appears that the potential for oil and gas reserves occurring in significant quantities is low.</p> <p>The WSAs would add to the diversity of the National Wilderness Preservation System of the region. There presently are no cold desert sand dune ecosystems in the region.</p> <p>A nonwilderness designation would probably result in a gradual degradation of wilderness qualities. Many of the qualities would be preserved by the nature of the WSAs (sand) and by other recommendations in the land use plan.</p>
Salt Wells R-4.3	Devils Playground- Twin Buttes	Protectively fence and sign Pine Springs; initiate a patrol and surveillance of the Pine Springs site. Establish protective withdrawals for the area (40 acres). In addition, Pine Springs should be designated as an Area of Critical Environmental Concern (ACEC).	<p>The BLM is charged with protection, by the most effective means available under its authority, of all sites under its jurisdiction identified as having archeological values. These sites have proven scientific values, and the proposed barriers and warnings would deter or reduce the impact of vandalism. A protective withdrawal on these sites would afford them protection from the location of mining claims; a disturbance of 5 acres or less on these sites could completely destroy them.</p>
Salt Wells R-6.1 and R-6.2	Devils Playground- Twin Buttes	The Devils Playground-Twin Buttes WSA is unsuitable for wilderness designation; but designate the area as having off-road vehicle (ORV) use limited to designated roads and trails.	<p>This WSA only minimally meets the basic wilderness criteria and does not possess attractive qualities that would stimulate someone to visit it. The naturalness of the area could be protected by designating ORV use as limited to designated roads and trails. The badlands portion would not add to the National Wilderness Preservation System, especially with other areas of better quality already proposed (see Honeycomb Buttes). The adjacent Pine Springs cultural site has been proposed as an ACEC (Salt Wells R-4.3).</p>

DISTRICT-WIDE ANALYSIS

Table D-3
(Continued)

Resource Area and MFP Decision	WSA(s) Affected	MFP Multiple-Use Recommendations	Discussion
Salt Wells R-6.3	Red Creek Badlands	Identify the Red Creek Badlands as unsuitable for wilderness designation; but designate it as having off-road vehicle (ORV) use limited to designated roads and trails.	<p>The State of Wyoming land (section 16) on the north portion of the WSA and the old drill road going to the state land from the south limit this WSA's potential as wilderness. A local rancher has used the old drill road for years as access to his grazing allotment and has expressed an interest in upgrading and maintaining the road.</p> <p>The surrounding country has received intensive seismic exploration activity over the past 20 years, and there are several old seismic lines within the WSA.</p> <p>The badlands are a fragile watershed with excessive natural erosion. District watershed plans call for a major project along the Red Creek drainage and side drainages to reduce this natural erosion. Since this area is a major contributor of silt to the Green River, it is important that this watershed treatment work be done.</p> <p>An important ecological value of the WSA is the indication that this area represents the northeasternmost limits of pinyon pine. If this is indeed the case, the area could be protected by a natural area designation. The important elk and deer winter range in this area would also benefit from a natural area designation. It is recommended that the area be closed to ORV use or limited to specific roads and trails.</p>
Salt Wells W-6.1	Red Creek Badlands	<p>Give the Red Creek Watershed and Scott Canyon area special protection through designation as an Area of Critical Environmental Concern (ACEC). Coordinate steps with the other BLM programs to achieve the following objectives stated in the 1980 Red Creek Watershed Management Plan:</p> <ol style="list-style-type: none"> 1. Reduce gully erosion 2. Reduce streambank erosion 3. Reduce peak flows 4. Limit surface disturbing activities 5. Increase perennial grasses 6. Improve livestock distribution 7. Improve wildlife distribution 8. Establish water gauging/water quality monitoring station 	<p>Reduction of the sediment yields from the Red Creek basin is a priority program. This could best be done by first designating the basin as an ACEC, and then prescribing special management to achieve the objectives stated in the 1980 Red Creek Watershed Management Plan. Restrictions on surface disturbance in the Red Creek Watershed would have a beneficial impact on the environment. The recreation program supports control of off-road vehicle use to prevent significant environmental damage. Refer to R-2.1 (Salt Wells MFP) for a detailed analysis of off-road vehicle use.</p> <p>Restricted activity in Red Creek would have adverse impacts on the lands and minerals programs; in that the Red Creek Watershed Management Plan calls for roads, pipelines, and mineral exploration to be confined to existing disturbed areas. No new surface disturbance would be allowed without a detailed analysis of the proposal and an approved reclamation plan.</p> <p>This recommendation is complemented by W-1.2 (Salt Wells MFP) which supports protection of identified fragile areas. With proper coordination, conflicts with other resource programs would be minimized.</p>

^{1/} These MFP decisions were made in 1981, subsequently the ACECs have been designated and management plans have been or are being developed.

DISTRICT-WIDE ANALYSIS

tains a summary of the planning recommendations that affect each WSA. The proposed action (see Table D-2) contains that combination of wilderness/nonwilderness recommendations reflected by the four planning documents.

Areas Of Critical Environmental Concern (ACECs)

Five ACECs have been designated in the Rock Springs District which affect seven WSAs. The ACEC process serves to highlight certain special areas as priority areas of management commitment and public visibility. Management plans are developed specifically for each individual ACEC. ACEC management plans may contain restrictions as severe as no surface occupancy, thereby limiting oil and gas development to offsite drilling; or they may contain no restrictions at all in some portions of an ACEC, depending on the sensitivity of identified values. ACEC management would not

be as restrictive as wilderness management. The designation of these ACECs has served *incidentally* to preserve some wilderness values of the WSAs involved, but ACEC designation does not constitute a "wilderness alternative." An area must stand on its own merits in meeting or falling short of the requirements for ACEC designation (Federal Register Vol. 47, No. 168, 57318-57330, 27 August 1980).

Forest Service Planning

The Bridger-Teton National Forest is adjacent to two BLM WSAs studied in this EIS; Raymond Mountain WSA in the Kemmerer Resource Area and Lake Mountain WSA in the Pinedale Resource Area (see Map D-1). The adjacent forest service lands were studied for wilderness suitability during the Forest Service's RARE II process but were not recommended for wilderness.

CHAPTER 2

AFFECTED ENVIRONMENT

This chapter includes a brief description of those elements of the environment that may be affected by actions proposed in the alternatives, including the proposed action. BLM, in an analysis of the critical elements, determined that the following resources do not occur or would not be affected by any action proposed: floodplains or wetlands; prime and unique farmlands; prime or sole source of drinking water; and wild or scenic rivers. Detailed descriptions and support data is available for public review in the Rock Springs District Office and/or the respective resource area offices of the BLM.

CLIMATE

The region's climate ranges from relatively cool and semiarid in the basin areas to cool and subhumid in the mountainous areas. The region is within the mid-latitude belt of westerly winds, with the terrain influencing the prevailing winds and dispersion characteristics.

Southwestern Wyoming seasonal temperatures vary widely, and the typical mean annual temperatures range from 33° F. at Kendall to 43° F. in the Salt Wells Resource Area (Science Applications, Inc. 1980). Extreme lows of -60° F. at Border and -55° F. at Afton, and highs of 104° F. at Green River (1954) and 103° F. at Kendall have been recorded (Science Applications, Inc. 1980). January high temperatures of 26° F. and lows of -5° F. are common at Farson; July temperatures in the Salt Wells Resource Area range from 50° F. to the upper 80's.

Annual mean precipitation in the region ranges from more than 21 inches at Bedford in Star Valley to less than eight (8) inches at Farson (Table D-4). Maximum monthly precipitation recorded in the region was 6.12 inches at Bedford December 1955 (Science Applications, Inc. 1980).

Generally snow falls in the region from September through May; the maximum monthly snow depth was recorded at Pinedale—68 inches in January. The mean annual snow cover ranges from 6.8 inches at Border and Pinedale to about 30 inches at Farson and Green River (Science Applications, Inc. 1980). The annual number of days with one inch or more of snow cover ranges from

68 at the Rock Springs Airport to 175 at Kendall (Science Applications, Inc. 1980).

Several severe blizzards have occurred in the region since January 1949, including major blizzards in February 1955, April 1968, and October 1971. Snowfalls of 10 to 15 inches or more from any one storm occur infrequently outside mountainous areas (BLM 1978a). Occasional floods, hailstorms, and droughts occur in the region (Science Applications, Inc. 1980).

The prevailing wind direction at Rock Springs is west, with slightly less occurrences from the west-southwest as a direct result of channeling of the prevailing westerly flow through the area's lower terrain (Science Applications, Inc. 1980). From 1968 to 1977, the average wind speed was about 10.8 miles per hour; peak winds of 46 miles per hour were recorded.

Visibility in the region is generally good. Measurements made in Rock Springs indicate 67 percent of the observations were greater than 40 miles (BLM 1980). Data for 1968 to 1977 show visibility of more than 25 miles for 84.5 percent of the 11 a.m. observations, 83.3 percent of the 2 p.m. observations, and 79.6 percent of the 6 p.m. observations (Science Applications, Inc. 1980). Fog, high winds, and precipitation are the major factors affecting visibility in the area.

AIR QUALITY

The district lies within the Wyoming Intrastate Air Quality Control Region (AQCR), as designated by the U.S. Environmental Protection Agency (EPA). The State of Wyoming has classified (January 1972) the Wyoming Intrastate AQCR as Priority III for total suspended particulates (TSP), meaning that ambient air quality within the region was better than the state standards (Table D-5). The trona industrial area six miles northwest of Green River was listed in 1977 by EPA as a nonattainment area for TSP (BLM 1978a).

The maximum allowable increments of TSP and sulfur dioxide (SO₂) by Prevention of Significant Deterioration (PSD) classes, designed to regulate increases from new sources within Priority III areas, are listed in Table D-6. The increments

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Table D-4
MEAN PRECIPITATION IN ROCK SPRINGS DISTRICT

<u>Big Sandy Resource Area</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	0.40	0.28	0.44	0.64	1.09	1.23	0.56	0.71	0.60	0.78	0.41	0.40	7.56
Farson													
<u>Kemmerer Resource Area</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	1.53	1.34	1.36	1.62	2.01	2.24	0.98	1.20	1.40	1.48	1.61	1.67	18.48
Afton													
<u>Bedford</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	2.03	1.87	1.86	1.76	2.47	2.44	0.93	1.35	1.39	1.56	1.91	2.22	21.06
Border													
<u>Border</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	1.28	1.00	0.98	1.12	1.31	1.66	0.67	0.97	1.07	1.12	1.18	1.32	13.68
Evanston													
<u>Evanston</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	0.68	0.67	0.94	1.72	1.17	1.21	0.68	0.84	0.82	1.08	0.88	0.78	10.98
Kemmerer													
<u>Kemmerer</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	0.64	0.55	0.63	0.74	1.14	1.38	0.59	0.81	0.74	0.77	0.67	0.67	9.36
Sage 4NNW													
<u>Sage 4NNW</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	0.74	0.58	0.76	0.97	1.25	1.27	0.58	0.80	0.90	0.91	0.81	0.63	9.36
Pinedale													
<u>Pinedale Resource Area</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	0.38	0.34	0.46	0.86	1.27	1.07	0.77	0.90	0.88	0.66	0.49	0.45	8.52
Big Piney													
<u>Big Piney</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	1.67	0.99	1.17	0.99	1.64	1.86	0.98	1.23	1.28	1.05	1.15	1.41	15.48
Kendall													
<u>Kendall</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	0.75	0.57	0.64	0.90	1.49	1.50	0.81	1.05	0.94	0.91	0.68	0.85	11.04
Pinedale													
<u>Pinedale</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	0.41	0.37	0.57	0.96	1.25	1.10	0.59	0.79	0.66	0.93	0.45	0.40	8.50
Green River													
<u>Green River</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN
	0.45	0.51	0.68	1.04	1.12	1.03	0.68	0.69	0.76	0.88	0.53	0.54	8.88
Rock Springs AP													
<u>Rock Springs AP</u>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL MEAN

Source: Science Applications, Inc. 1980.

DISTRICT-WIDE ANALYSIS

Table D-5
NATIONAL AND WYOMING STATE AMBIENT AIR QUALITY STANDARDS
(Concentrations in $\mu\text{g}/\text{m}^3$ unless otherwise noted)

Pollutant	National Primary Standard ^{1/}	National Secondary Standard ^{1/}	Wyoming Standard ^{1/}
1) Total Suspended Particulates Annual Geometric Mean 24-Hour Maximum	75 260	60 150	Same as Secondary Same as Secondary
2) Sulfur Dioxide Annual Arithmetic Mean 24-Hour Maximum 3-Hour Maximum	80 365 --- 2/	--- --- 1,300	60 260 1,300
3) Carbon Monoxide 8-Hour Maximum 1-Hour Maximum	10 mg/m^3 40 mg/m^3	Same as Primary Same as Primary	Same as Primary Same as Primary
4) Nitrogen Dioxide Annual Arithmetic Mean	100	Same as Primary	100 ^{3/}
5) Photochemical Oxidants 1-Hour Maximum	160	Same as Primary	Same as Primary
6) Hydrocarbons (Nonmethane) 3-Hour (6 to 9 a.m.)	160	Same as Primary	Same as Primary
7) Hydrogen sulfide (H_2S) 0.5-Hour Average 0.5-Hour Average	--- ---	--- ---	70 ^{4/} 40 ^{5/}

^{1/} National standards, except those based on annual averages or annual geometric mean, are not to be exceeded more than once per year.

^{2/} No standard.

^{3/} Emission of nitrogen oxides from new gas-fired fuel-burning equipment shall be limited to 0.2 lb. per million Btu of heat input. This does not apply to internal combustion engines with a heat input of less than 200 million Btu per hour.

^{4/} Standard not to be exceeded more than two times per year.

DISTRICT-WIDE ANALYSIS

Table D-6

PREVENTION OF SIGNIFICANT DETERIORATION MAXIMUM ALLOWABLE INCREMENTS (in micrograms per cubic meter)

<u>Pollutant</u>	<u>Class I</u>	<u>Class II</u>	<u>Class III</u>
<u>Particulate Matter</u>			
Annual Geometric Mean	5	19	37
24-Hour Maximum	10	37	75
<u>Sulfur Dioxide</u>			
Annual Arithmetic Mean	2	20	40
24-Hour Maximum ^{1/}	5	91	182
3-Hour Maximum ^{1/}	25	512	700

^{1/} May be exceeded once per year.

Source: Science Applications, Inc. (1980).

DISTRICT-WIDE ANALYSIS

represent the maximum increase in pollutant concentrations above existing baseline ambient air quality levels. The PSD classes established by EPA are:

Class I—areas where nearly any air quality deterioration would be considered significant, thus allowing little or no energy or industrial development.

Class II—areas where deterioration that would normally accompany moderate, well-controlled growth would not be considered significant.

Class III—areas where deterioration would be permitted to allow concentrated or very large scale energy or industrial development as long as the secondary NAAQS are not exceeded.

The mandatory Class I areas in Wyoming under the 1977 Clean Air Act amendments include two national parks and five wilderness areas within or adjacent to the district: Yellowstone and Grand Teton national parks and the Bridger, Fitzpatrick, North Absaroka, Teton, and Washakie wilderness areas. Proposed Wyoming Class I areas within or adjacent to the district include the BLM's Scab Creek Instant Study Area; Fossil Butte National Monument; and the Forest Service's Popo Agie and Glacier primitive areas. The remainder of the district is classified as Class II.

Redesignation of classes, such as from Class II to Class I, may be requested by the state, respective federal land manager, or Indian governing body. Redesignation proposals are subject to EPA approval. Federal land managers may propose redesignation if federal land reclassification is more stringent than that of the state or EPA. Each proposal must include a social, economic, and environmental analysis and would be subject to public hearings.

Science Applications, Inc. (1980) reports that most of the region falls in the Sublette Air Basin, which is bounded by the Wyoming-Utah border to the south, Bear River Divide and Wyoming Range to the west, and the Wind River Range and Great Divide Basin to the north and east. Transport in this area is predominantly from the west and southwest throughout the year, with dispersion caused by strong surface heating during the day which results in considerable instability. Stable conditions prevail at night (see stability in Glossary). The more complex terrain of the northern portions of the basin cause significant variance in that general pattern.

The Far West Air Basin of extreme western Wyoming, bounded on the east by the Teton and Salt River mountain ranges, has less-than-adequate dispersion because of eastern terrain's blocking effect. The effect is not as prominent in the southern portion of the basin because the mountains are about 2,000 feet lower than those in the north. Air basins provide a means of determining how quickly air pollutant emissions would be dispersed within an area.

TOPOGRAPHY

The region is an area of low mountains and semiarid basins located in the Middle Rocky Mountain and Wyoming Basin provinces. The major mountain ranges are the Wind River, which forms the northeast boundary of the region, the Salt River and Wyoming in the northwest, and the Uinta in the south. Other major topographic features are the Overthrust Belt in the western part of the region; the vast Green River Basin in the central portion; the Rock Springs Uplift, and the Great Divide and Washakie basins in the eastern part. Elevations range from a low of 6,000 feet along the shoreline of the Flaming Gorge Reservoir in the south-central portion of the region, to the towering Wind River peaks of more than 13,000 feet.

The Green River Basin is characteristic of a high desert plateau, with a generally flat-lying surface and elevations of about 6,300 feet. Buttes that reach an elevation of about 6,500 feet dot the landscape. The area is characterized by a dendritic drainage pattern, the most common type of surface erosion in southwest Wyoming. The ephemeral and intermittent streams that originate in the area, flow in a generally southern direction. The major streams of the basin are the Green River, Blacks Fork, and Henrys Fork, which flow into the Flaming Gorge Reservoir. These streams, plus the Hams Fork, Big Sandy River, and New Fork River constitute the headwaters of the Colorado River system in Wyoming. Other topographic features in the Green River Basin include badland topography, rolling desert, playa lakes, and active sand dunes.

The portion of the Overthrust Belt within the Rock Springs District includes high rolling hills in the southern two-thirds, with elevations seldom exceeding 8,000 feet, and peaks above 9,000 feet in the northern portion. Within the ridges and valleys in the west, most of the area drains into the Bear River and eventually into the Great Salt Lake.

DISTRICT-WIDE ANALYSIS

Oyster Ridge, Bear River Divide, Commissary Ridge, and the Tump and Sublette ranges are in the south, and the Wyoming and Salt River ranges are in the north.

The foothills of the Wind River Range feature rocky, steep, rough terrain ranging in elevation from 7,400 to 9,600 feet.

The Rock Springs Uplift features a depression called Baxter Basin, which has elevations between 6,300 and 6,800 feet. The uplift is a wide belt of inward-facing, sandstone escarpments that rise several hundred feet above the basin. The late Tertiary Leucite Hills volcanic field in the northern part of the uplift features lava-capped buttes and mesas, cinder cones, and pipes. The highest elevation in the uplift is the 8,680-foot Aspen Mountain. Bitter Creek is the major drainage in the uplift, flowing east to west across the uplift and into the Green River.

GEOLOGY

Geomorphology

The Rock Springs District is a region of low mountains and desert basins. It is located in the Middle Rocky Mountain and Wyoming Basin provinces and is divided geographically from west to east into the Overthrust Belt, Green River Basin, Rock Springs Uplift, Great Divide Basin, and Washakie Basin (Geological Survey 1976) (see Map D-2).

Cretaceous and older rocks of the Overthrust Belt and Rock Springs Uplift are folded and faulted sediments that strongly influence topography. Flat to gently dipping Tertiary age rocks occur in the Green River, Great Divide, and Washakie basins. None of the mountains are sufficiently uplifted, faulted, or eroded to expose granitic rocks except those along the Wind River Front (adjacent to the Scab Creek Instant Study Area). Volcanic rocks are present only in the Leucite Hills in the northern portion of the Rock Springs Uplift.

The Overthrust Belt is a series of north-south trending linear folds and faults that form mountains and valleys. Cenozoic, Mesozoic, and Paleozoic rocks are exposed at elevations between 6,000 and 10,200 feet above sea level. Some of the best examples of the folding and thrusting of Paleozoic and Mesozoic sediments of the Over-

thrust area are contained in the Raymond Mountain and Lake Mountain WSAs.

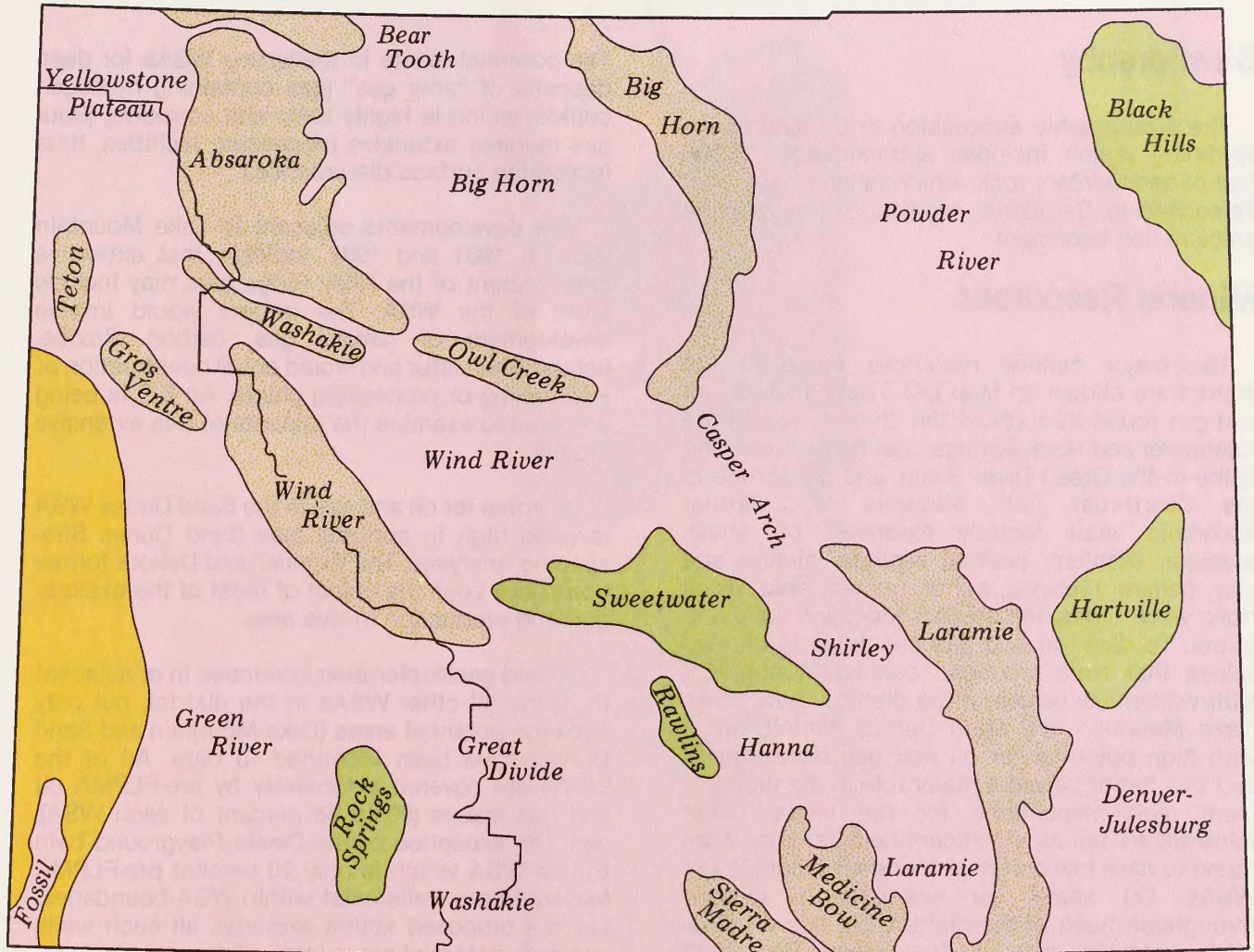
The Green River Basin is situated between the Overthrust Belt and the Rock Springs Uplift. The major axis trends north-south and is situated east of the center of the basin. Rocks of the Wasatch, Green River, and Bridger formations of fluvial and lacustrine origins outcrop within the basin. A large east-facing escarpment, White Mountain, defines the eastern edge of the basin. An enormous lake (Lake Gosiute) existed in the basin during the deposition of the Green River Formation in which numerous beds of trona and halite were formed.

The Rock Springs Uplift is a double plunging asymmetric anticline lying between the Green River Basin on the west and the Great Divide and Washakie basins on the east.

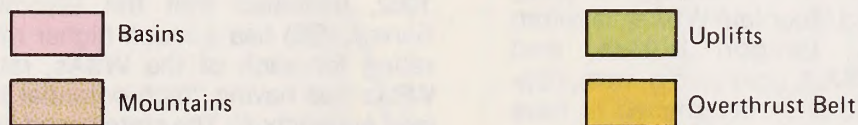
The Great Divide Basin is located northeast of the Rock Springs Uplift and is a shallow asymmetric syncline with internal drainage. The axis of the syncline trends northeastward along the eastern and northern margins of the basin. A low gentle east-plunging anticline, Wamsutter Arch, separates the Great Divide Basin from the Washakie Basin to the south.

WSAs in the Washakie Basin located southeast of the Rock Springs Uplift are not discussed in this EIS. The Adobe Town WSA which is located in the Washakie Basin will be addressed in the BLM management decisions and EIS which will be prepared by the BLM Rawlins District in 1982-1984.

Alkali Draw, South Pinnacles, Alkali Basin-East Sand Dunes, Red Lake, and Honeycomb Buttes WSAs are within the Great Divide Basin. Whitehorse Creek and Oregon Buttes WSAs are located at the edges of the Rock Springs Uplift, Green River Basin, and the Great Divide Basin. Buffalo Hump and Sand Dunes WSAs occupy the edges of the Rock Springs Uplift and the Green River Basin. Devils Playground-Twin Buttes WSA is located in the southern portion of the Green River Basin. Red Creek Badlands is located at the southern border of the Green River Basin-Rock Springs Uplift.



Source: Wyoming Mines and Minerals, 1979.
Geological Survey of Wyoming



DISTRICT-WIDE ANALYSIS

Stratigraphy

The stratigraphic succession in the southwest Wyoming region includes approximately 25,000 feet of sedimentary rock, which range in age from Paleocene to Cambrian, overlying the crystalline precambrian basement.

Mineral Resources

The major mineral resources found in the district are shown on Map D-3. These include: oil and gas found throughout the district, coal in the Kemmerer and Rock Springs coal fields, trona and halite in the Green River Basin, and phosphate in the Overthrust Belt. Minerals of potential economic value include extensive oil shale, uranium, titanium, potash, zeolites, alunite and clay, helium, nitrogen, sulfur, copper, gold, black trona water (soda ash source), jade, and sand and gravel. To date, oil and gas are the only mineral values that have produced consistent conflicts with wilderness values in the district. Two WSAs (Lake Mountain and Sand Dunes) contain areas with high potential for oil and gas development and this factor played a major role in the management recommendations for the areas. Other minerals are not as significant because they were found to have low potential for development in the WSAs. Oil shale, for example, is located throughout much of the district, but has development potential only in the Green River and Washakie basins. Coal (in the Sand Dunes and Raymond Mountain WSAs), trona (Devils Playground-Twin Buttes WSA), phosphate (Lake Mountain and Raymond Mountain WSAs), uranium (Whitehorse Creek, Oregon Buttes, and Honeycomb Buttes WSAs), gold (same area), copper and other minerals were determined to have low potential in the WSAs reviewed. Mineral reports are available for review at the Rock Springs District Office.

The Overthrust Belt area has the highest potential for oil and gas development within the district, with high potential existing in the basins. The Overthrust Belt has been called the most important oil and gas exploration area since Prudhoe Bay in Alaska. To date oil and gas has been produced from Overthrust areas outside the Raymond Mountain and Lake Mountain WSAs. Exploratory drilling on the periphery of these WSAs has indicated a high potential for gas in the eastern-most portion of the Lake Mountain WSA, but only low-to-moderate potential for Raymond Mountain WSA.

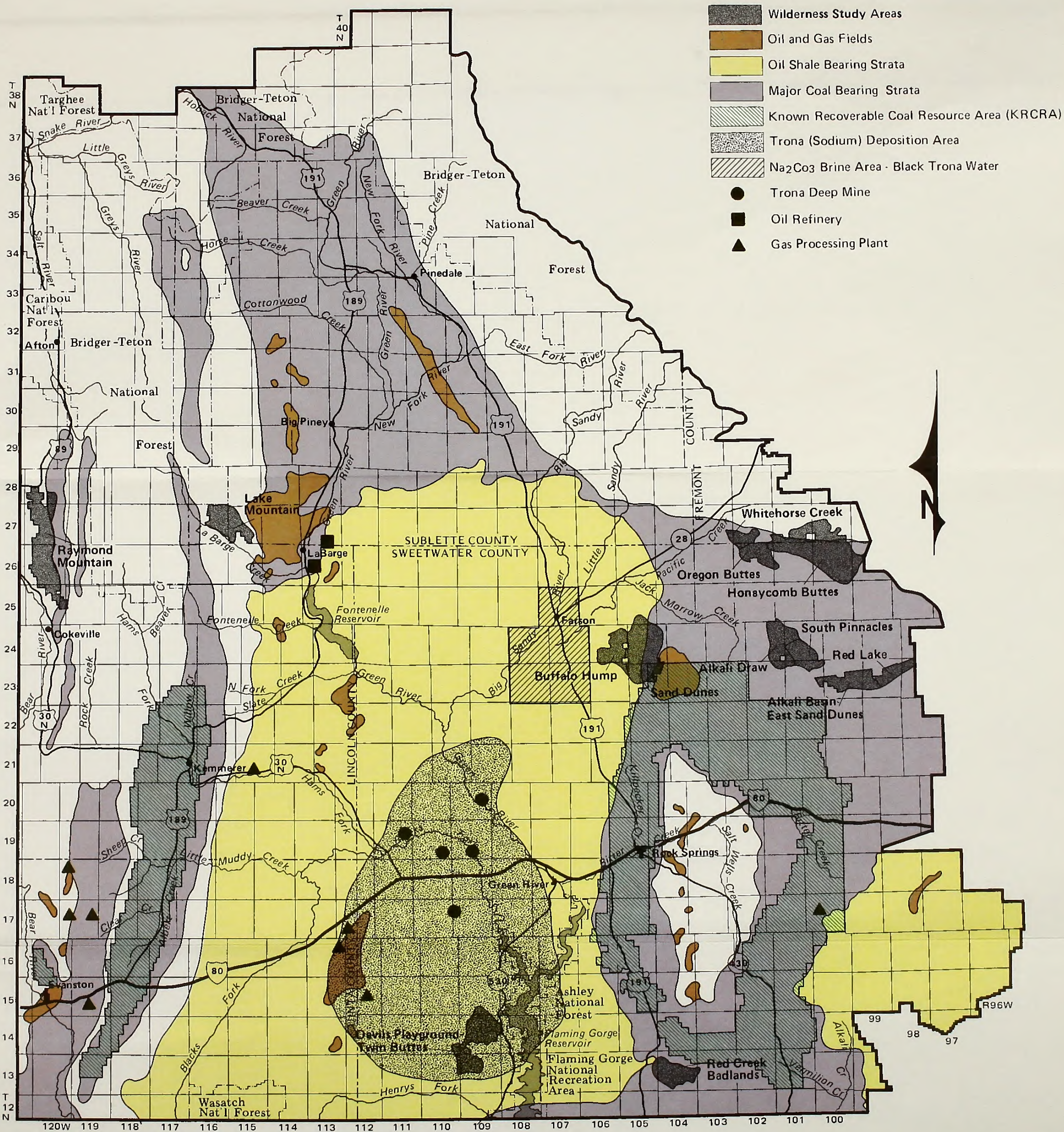
The potential exists in these two WSAs for deep deposits of "sour gas" (gas containing hydrogen sulfide) which is highly toxic and corrosive. (Sour gas requires extensive processing facilities, thus increasing surface disturbance.)

New developments adjacent to Lake Mountain WSA in 1981 and 1982, indicate that extensive development of the Riley Ridge area may include parts of the WSA. The project would involve development of natural gas, carbon dioxide, helium, and sulfur and would entail construction of sweetening or processing plants. An EIS is being prepared to examine the impacts of this extensive project.

Potential for oil and gas in the Sand Dunes WSA is rated high in portions (see Sand Dunes Site-specific Analysis). The Frontier and Dakota formations have been the object of most of the exploration and production in this area.

Oil and gas exploration continues in or adjacent to nearly all other WSAs in the district, but only two high potential areas (Lake Mountain and Sand Dunes) have been identified to date. All of the WSAs are covered extensively by pre-FLPMA oil and gas leases (50 to 96 percent of each WSA), with the exception of the Devils Playground-Twin Buttes WSA which is only 20 percent pre-FLPMA leased. Some wells exist within WSA boundaries, but the proposed action excludes all such wells and high potential areas from wilderness designation.

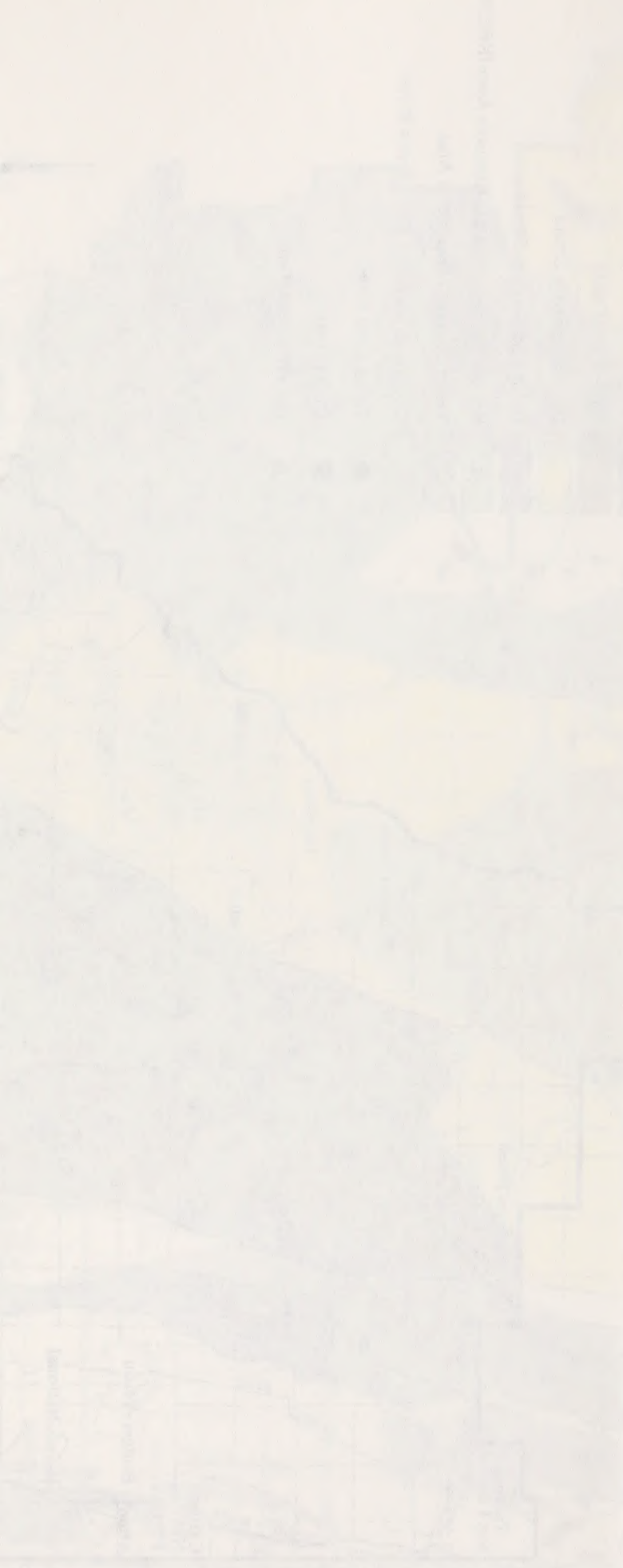
Coordination with the State of Wyoming in May 1982, indicated that the Wyoming Geological Survey, (GS) has a much higher mineral potential rating for each of the WSAs, rating all district WSAs as having "high potential for oil and gas" (see Appendix A). The state based their evaluations of potential on the geologic setting of each WSA. If a WSA contains source rocks, or if any reservoir rocks are known to occur in the area, then the WSA was assigned a high mineral potential. In contrast, BLM evaluations are based on mineral potential and possibilities of mineral development (BLM 1981c-g). In addition the state rates some minerals as having a "very high potential," such as trona and trona-halite in the Devils Playground-Twin Buttes WSA (the state sections are the only sections leased for this mineral in this WSA). Although the Wyoming GS recommends exclusion of these areas from wilderness consideration if possible, they further state "we hope that other lands could be substituted for these valuable areas."



Sources: U.S. Department of Agriculture, Soil Conservation Service, GREEN RIVER BASIN STUDY, 1978;
 The Geological Survey of Wyoming, WYOMING MINES and MINERALS MAP, 1979;
 U.S. Department of the Interior (USDI), Bureau of Land Management (BLM), SODIUM MINERAL DEVELOPMENT EA;
 USDI, BLM, Rock Springs COAL LAND USE DECISIONS (Three Documents), 1982.

10 10 20 30 miles

Map D-3
MINERAL RESOURCES
 Rock Springs District Wide
 Wilderness Environmental Impact Statement



The first of these is the fact that the population of the United States has increased from 3,900,000 in 1790 to 120,000,000 in 1920. This increase has been the result of a number of factors, including immigration, natural increase, and the discovery of new lands.

The second factor is the fact that the population of the United States has become more concentrated in the eastern half of the country. This is due to a number of factors, including the discovery of new lands, the growth of cities, and the development of transportation.

The third factor is the fact that the population of the United States has become more educated. This is due to a number of factors, including the growth of schools, the development of higher education, and the increasing importance of education in the economy.

The fourth factor is the fact that the population of the United States has become more mobile. This is due to a number of factors, including the development of transportation, the growth of cities, and the increasing importance of mobility in the economy.

The fifth factor is the fact that the population of the United States has become more diverse. This is due to a number of factors, including immigration, the growth of cities, and the increasing importance of diversity in the economy.

DISTRICT-WIDE ANALYSIS

Paleontological Resources

The region includes many important paleontological sites, and significant collections of vertebrate fossils from the area are housed in prominent national and university museums throughout the United States. McGrew and Bown (1976) estimate that individual fossil sites of Eocene age alone number in the thousands. The object of numerous paleontological expeditions since the 1860's, the area's rich fossil localities have been studied by more than 30 museums and universities and many of the region's localities have potential for significant additions to the scientific record of life in Wyoming millions of years ago.

Among the most significant fossil records in the region are the richest known Tertiary fossil bird quarries in the world; superbly preserved early Tertiary (65 million years) fossil fish in the largest known concentrations in the world; rare but significant specimens of bats, birds, crocodiles, and turtles; one of the most significant early Eocene (ca. 53.5–47 million years) mammalian faunas in the world; and one of the most important collections of middle Eocene (ca. 44–42 million years) mammals in the Western Hemisphere (McGrew and Bown 1976). Lincoln and Uinta counties have areas of considerable paleontological potential for future scientific efforts (McGrew and Bown 1977).

Few, if any, of the above sites are within, or in close proximity to the WSAs. Nevertheless, the potential does exist for important paleontological finds in some of these WSAs, particularly Honeycomb Buttes, Oregon Buttes, Whitehorse Creek, and others in the Great Divide Basin. Extremely important fossil localities are considered valuable and nonrenewable national assets that are protected under the Antiquities Act.

SOILS

The soils of the region are generally shallow in depth with small areas of deep soils occurring where eroded soil particles have accumulated (BLM 1978a). Soil structure is generally weak in stability to nonexistent. Nearly all of the soils in the region have some level of salinity and alkalinity; and contain some calcium carbonate, usually concentrated in a subsoil zone (BLM 1978a).

A moderate to high rate of erosion from water action occurs on the region's soils; and a significant rate of wind erosion occurs in the region, especially on the sand dunes (BLM 1978a). Water erosion on steep, sparsely vegetated slopes occurring throughout the region is unavoidable due to the high runoff. Map D-4 is a general soil association map that has been prepared from U.S. Department of Agriculture data (County Commissioners, et al. 1975; U.S. Department of Agriculture, et al. 1978). Detailed information on these associations is available for public review in the BLM Rock Springs District Office. Table D-7 lists general descriptions of the soil associations that would be affected by wilderness designation; Map D-4 indicates the soil associations located in each WSA.

WATER RESOURCES

Three WSAs provide water for perennial streams: Red Creek Badlands and Lake Mountain WSAs augment the Green River; Raymond Mountain WSA provides headwaters for the Thomas Fork which flows into the Bear River.

The Great Divide Basin WSAs (part of Oregon Buttes, Honeycomb Buttes, Alkali Draw, South Pinnacles, Alkali Basin-East Sand Dunes, and Red Lake) constitute part of an internal drainage system which is a unique feature of the basin. Intermittent streams from Oregon Buttes and Honeycomb Buttes flow into Bear Creek on the north, while Bush Creek and Alkali Draw carry intermittent flows from the four southernmost WSAs in the basin. The water is utilized by livestock, wildlife, and wild horses. Several livestock reservoirs exist in the basin. Springs on the south and west side of Oregon Buttes provide some potable water at their source, but the adjacent livestock reservoirs are not potable.

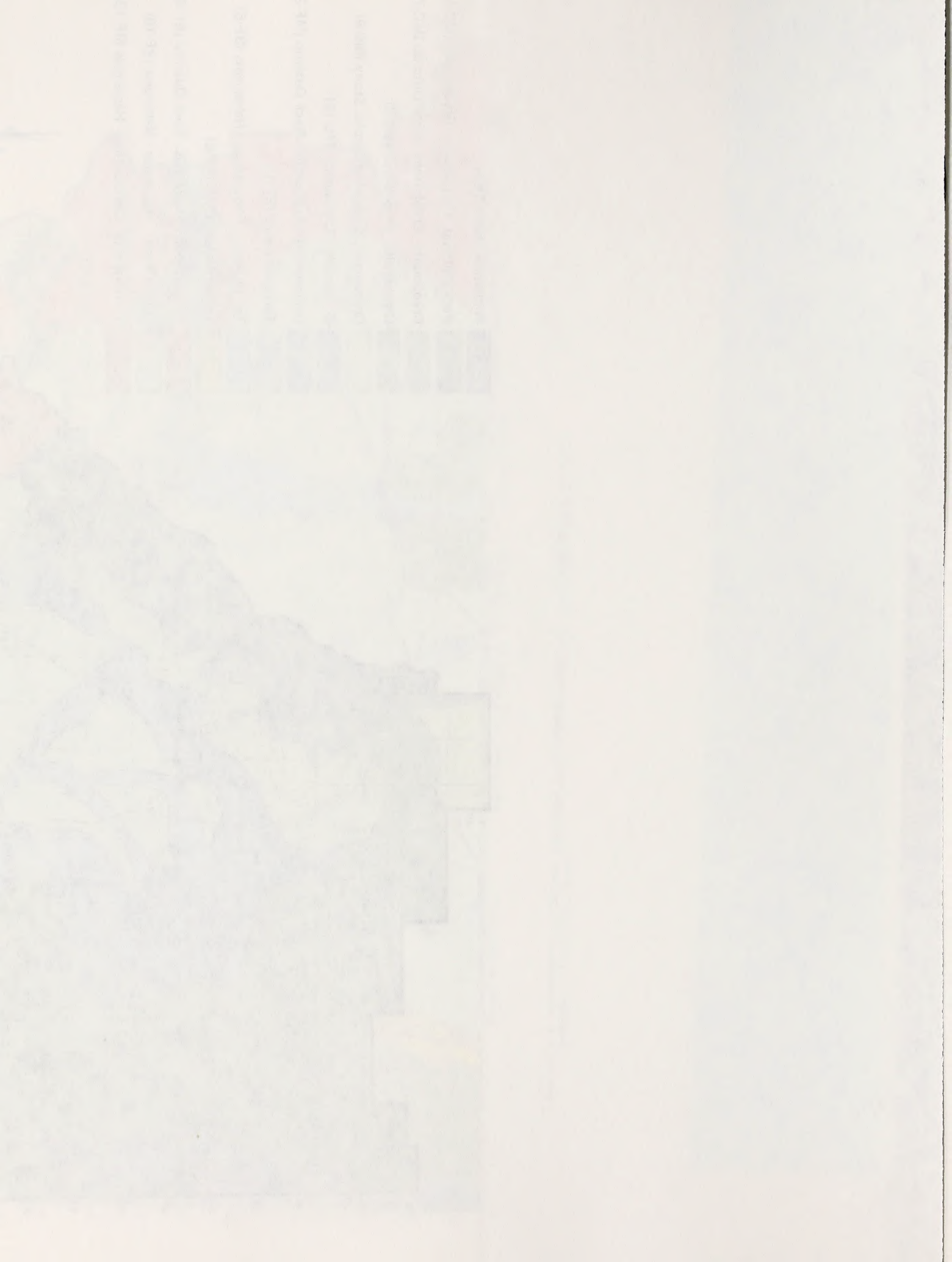
Although Buffalo Hump and Sand Dunes WSAs are part of the Green River hydrogeologic basin, no water flows from these two WSAs into the local drainage, Killpecker Creek. The approximately eight inches of precipitation (largely snow) received here per year is absorbed by local vegetation and produces some scattered ponds. The Sand Dunes ponds and ice lenses produced in this area are part of the unique and supplemental values identified for this WSA. The east-west stretch of ponds in the southern portion of the

DISTRICT-WIDE ANALYSIS

Table D-7
SOIL ASSOCIATIONS OF THE PROPOSED WILDERNESS AREAS

Mapping Unit	Name	Description	Parent Material	Typical Vegetation
MC- 4	Rock Outcrop-Cryoboralfs-Cryoborolls Association	Rock outcrop and very steep, shallow to very deep, well-drained soils formed in gravelly to stony loamy material.	Hard igneous rocks	Forest
MC- 7	Cryoboralfs-Cryoborolls-Rock Outcrop Association	Steep, shallow to very deep, well-drained soils formed in gravelly loamy material.	Mixed hard and soft sedimentary rock and rock outcrop.	Forest with Interspersed Parks
MF- 3	Haploborolls-Argiborolls-Rock Outcrop Association	Sloping to steep, shallow to very deep, well-drained soils formed in loamy and clayey material.	Mixed hard and soft sedimentary rock and rock outcrop.	Grass-shrub with scattered timber
BF- 1	Torrismments Association	Undulating to dune topography, very deep, excessively drained soils formed in wind-laid sands.	--	Grass-shrub
BF-10	Torrorthents-Haplargids-Natrargids Association	Gently sloping to steep, shallow to very deep, well-drained soils in loamy material.	Soft and hard sedimentary rock.	Grass-shrub
BF-13	Torrorthents-Camborthids-Haplargids Association	Nearly level to steeply sloping, very deep, well-drained soils formed in loamy material.	Mixed rocks on uplands and alluvium on playas.	Grass-shrub

Source: U.S. Department of Agriculture, Green River Basin, Wyoming, Cooperative River Basin Study Main Report, September 1978, Portland, Oregon.



DISTRICT-WIDE ANALYSIS

Sand Dunes WSA is utilized by livestock, wildlife, wild horses, and ORV recreationists.

Whitehorse Creek WSA and a small portion of the Oregon Buttes WSA provide intermittent stream flow to Alkali Wash, and Whitehorse Creek, which in turn flow to Pacific Creek, to the Big Sandy River, and finally to the Green River. Most of the intermittent drainage is captured by livestock reservoirs in the area and utilized by livestock and wildlife.

At the southern end of the district, Devils Playground-Twin Buttes WSA provides only intermittent flows of poor quality surface water through several washes into the Flaming Gorge Reservoir, 6 to 10 miles to the east. Some of this intermittent flow is intercepted by the Henrys Fork which flows into the reservoir. Below the Flaming Gorge Dam, the Green River continues its course into Utah where it receives heavily silted waters from Red Creek, which begins in the Red Creek Badlands WSA. Natural geologic erosion of the Red Creek Badlands is responsible for the low quality water (see site-specific analysis).

The Lake Mountain and Raymond Mountain WSAs provide much higher quality water to perennial streams that are also important trout fisheries (see site-specific descriptions of wildlife and water). There are two perennial streams in Raymond Mountain and one in Lake Mountain. The BLM exclosures on Huff Creek in Raymond Mountain are responsible for maintaining high water quality that would otherwise be impacted by surface runoff and grazing of riparian areas by livestock. The WSAs provide high-quality, low-volume waters for the sensitive Bonneville or Bear River and Colorado River cutthroat trout. There are no gauging stations on the streams within these WSAs. Channel and streambank conditions for the perennial streams in these two WSAs are generally stable (again, the Huff Creek exclosures play a key role).

Water quality in all other WSAs is poor. The poor quality of water in the Red Creek watershed is addressed in the site-specific analysis and a special BLM Red Creek Watershed Management Plan is available for review in the Rock Springs District Office. The entire Red Creek watershed has been designated as an Area of Critical Environmental Concern (ACEC), to manage the area specifically for watershed problems that contribute to the unacceptable levels of silt and salinity that are carried into the Green River system.

In a coordination meeting with the State of Wyoming (February 1982), the Wyoming Water Development Commission indicated that no state water projects are proposed in any of the WSAs. In a second coordination meeting with the State of Wyoming (April 1982), the Wyoming Department of Environmental Quality indicated that they recommended wilderness designation to protect Class I waters such as Red Creek (see Appendix A).

A June 1982 check of private water filings in the State Engineer's Office revealed a total of 14 permits in two WSAs, Raymond Mountain and Lake Mountain. In Raymond Mountain WSA a total of ten water permits are on record; eight for surface water and two for ground water. The two ground water permits are to supply water for the drilling of two oil and gas wells on a pre-FLPMA lease. In Lake Mountain WSA, four surface water permits are on record.

VEGETATION

The Rock Springs District has 12 major vegetation types based upon significant differences in the proportions and kinds of native plant species predominant in the area. Variations of vegetation are directly related to elevation, exposure, climate, and soil type. Vegetation types and total acreages are shown in Table D-8. The species composition of the vegetation types are listed on Table D-9.

Table D-8

COMMON VEGETATION TYPES IN THE ROCK SPRINGS DISTRICT

	Percent	Acres
Sagebrush-Grass	67	3,886,000
Saltbush	11	638,000
Greasewood	4	232,000
Juniper	5	290,000
Grass	2	116,000
Conifer	2	116,000
Perennial Forb	2	116,000
Mountain Shrub	2	116,000
Meadow	1	58,000
Desert Shrub	2	116,000
Broadleaf Tree	1	58,000
Barren	1	58,000
Total		5,800,000 ^{1/}

^{1/} This figure only includes public lands administered by BLM.

DISTRICT-WIDE ANALYSIS

Table D-9
VEGETATION TYPE SPECIES COMPOSITION

Shrubs	Forbs	Grasses	Trees
SAGEBRUSH-GRASS TYPE			
big sagebrush rabbitbrush black sagebrush low sagebrush	phlox lupine wild buckwheat penstemon	western wheatgrass thickspike wheatgrass Indian ricegrass needle-and-thread bluebunch wheatgrass Sandberg bluegrass	
SALTBUSH TYPE			
Nuttall saltbush winterfat shadecale bud sagebrush	phlox wild buckwheat kochia onion	bottlebrush squirreltail western wheatgrass Indian ricegrass Sandberg bluegrass	
GREASEWOOD TYPE			
black greasewood Nuttall saltbush rabbitbrush	kochia tansy mustard seepweed	desert saltgrass bottlebrush squirreltail foxtail barley western wheatgrass Nuttall alkaligrass	
JUNIPER TYPE			
mountain mahogany sagebrush rabbitbrush ocean spray	miner's candle golden aster goldenweed	bluebunch wheatgrass Indian ricegrass needlegrasses bottlebrush squirreltail	juniper limber pine
GRASS TYPE			
	pussytoes dandelion	sedges bluegrasses western wheatgrass bluebunch wheatgrass Idaho fescue foxtail barley	
CONIFER TYPE			
huckleberry	arnica bistort	elk sedge timothy bluegrasses mountain brome slender wheatgrass pine reedgrass	lodgepole pine Douglas fir limber pine subalpine fir Engelmann spruce aspen

DISTRICT-WIDE ANALYSIS

Table D-9
(Continued)

Shrubs	Forbs	Grasses	Trees
PERENNIAL FORB TYPE			
birdsfoot sagewort	goldenweed phlox scurfpea sandwort buckwheat prince's plume milkvetch miner's candle fringed sagewort	bluegrasses sedges bluebunch wheatgrass	
MOUNTAIN SHRUB TYPE			
antelope bitterbrush snowberry rose chokecherry serviceberry currants curtleaf mahogany buckbrush big sagebrush	lupine phlox buckwheat groundsel arrowleaf bluebell	brome timothy bluegrasses Idaho fescue needlegrass slender wheatgrass	
MEADOW TYPE			
willows buffaloberry shrubby cinquefoil silver sagebrush black greasewood	dandelion yarrow blue-eyed grass asters iris	desert saltgrass wire rush bulrush sedges muhly grass bluegrasses tufted hairgrass redtop manna grass alkali grass	cottonwood
DESERT-SHRUB TYPE			
horsebrush spiny hopsage fourwing saltbush shadscale	phlox buckwheat globemallow	thickspike wheatgrass Indian ricegrass squirreltail needle-and-thread	
BROADLEAF TREE TYPE			
mountain juniper big sagebrush myrtle pachistima bearberry snowberry blueberry Oregon grape	aster buckwheat columbine violet dandelion groundsel geranium penstemon bluebell	bluegrasses brome needlegrass elk sedge timothy slender wheatgrass	aspen

DISTRICT-WIDE ANALYSIS

Sagebrush-grass Type

Sagebrush-grass is the major vegetation type covering approximately 67 percent of the district. This vegetation type is found in nearly all soil types and topographic regions. It is the most common vegetation type in the district's WSAs and is the dominant type within all of the WSAs except Honeycomb Buttes where badlands and saltbush-winterfat dominate, and Red Creek Badlands which is co-dominated by sagebrush-grass and juniper.

The proportions of the component plant species of the sagebrush-grass type vary according to elevation, precipitation, and soil characteristics. The general structure of the sagebrush-grass classification is shrubs (40 to 70 percent), grasses (30 to 60 percent), and forbs (up to 10 percent). The sagebrush-grass communities in the district are usually dominated by big sagebrush; general subtypes in the sagebrush-grass community are big sagebrush, black sagebrush, low sagebrush, silver sagebrush, and rabbitbrush.

Saltbush Type

The saltbush vegetation type covers approximately 11 percent of the Rock Springs District. Saltbush is found in the impervious soils of the dry alkaline lowlands and is characterized by sparse ground cover. The existing ground cover is composed of 70 to 90 percent shrubs, 10 to 20 percent grasses, and a trace to 20 percent forbs.

The plants associated with saltbush are listed in Table D-9. These component plant species remain fairly constant, with the proportion of each species the primary variable. In a few areas, winterfat is the dominant species. On the fringes of the saltbush type, big sagebrush and black greasewood are the primary species in regard to percent of composition. The sparse ground cover provided by saltbush makes areas with this vegetation type highly susceptible to wind erosion.

Greasewood Type

Greasewood encompasses approximately four percent of the land in the Rock Springs District. Greasewood occurs along live and intermittent stream basins of lower elevations where soils are too alkaline to support high density meadow grasses and too moist to accommodate heavy con-

centrations of desert shrubs. Greasewood ground cover has a low density, rendering these areas highly susceptible to wind and water erosion.

Juniper Type

The juniper type encompasses approximately five percent of the land in the Rock Springs District. This type occurs in the drier regions and on slopes with southern and eastern exposures in shallow, poorly developed soils. The juniper type is accompanied by a variety of understory species.

Another subtype of the district is an intermix of juniper and limber pine found in drier areas, i.e., the eastern face of White Mountain, Essex Mountain north of the sand dunes, and on the badlands adjacent to the Green River. The Devils Playground-Twin Buttes and Red Creek Badlands WSAs also contain this subtype. The juniper-limber pine subtype has an understory of desert climate grass species.

Grass Type

The grass type occupies approximately two percent of the land in the Rock Springs District. Dominant grass species of the grass type are listed in Table D-9.

Conifer Type

The conifer type accounts for approximately two percent of the land in the Rock Springs District. Conifer type characteristically occurs in higher elevations and includes Douglas fir, white fir, Engelmann spruce, subalpine fir, lodgepole pine, limber pine, and aspen. This vegetation type is found in existing wilderness areas (Forest Service) of the region and in the Raymond Mountain, Lake Mountain, and Oregon Butte WSAs.

The highest elevations bounding the Wyoming and Wind River mountain ranges are typified by coniferous forest-aspen intermingled with open areas dominated by sagebrush. Both mountain areas have Engelmann spruce-subalpine fir at the highest elevations where moisture is abundant. The lower reaches of the Wyoming Range are typified by Douglas fir on the northern exposures. Lodgepole pine can be found at any elevation, but is most common on drier sites and burned-over areas.

DISTRICT-WIDE ANALYSIS

Perennial Forb Type

Perennial forbs encompass approximately two percent of the land in the Rock Springs District. This type has a low production capacity due to poorly developed soils with little available moisture. The perennial forb type consists of a variety of communities, depending upon soil and climatic conditions.

Mountain Shrub Type

Mountain shrub covers approximately two percent of the land in the Rock Springs District. Mountain shrub typically occurs at elevations near 8,000 feet, where soils are deep and high in nutrients and receive 12–19 inches annual precipitation. Many of these areas are located in snowdrift areas.

A variety of trees and shrubs characterize the mountain shrub type. The aspect is readily identifiable by a canopy of tall shrubs such as serviceberry, chokecherry, and Rocky Mountain maple. Surrounding and within the understory of the mountain shrub type are low shrub species.

Meadow Type

The meadow type includes both wet and dry meadows. This vegetation type encompasses approximately one percent of the land in the Rock Springs District. The only WSA with this vegetation type is Raymond Mountain. Dry and wet meadows share the same component species but in different proportions. Species common to both include sedges, rushes, bluegrasses, and asters.

Desert Shrub Type

Approximately two percent of the lands in the Rock Springs District are classified as desert shrub type. Areas so classified occur on dry, shallow, poorly drained, and highly alkaline soils in the southern part of the district.

Broadleaf Tree Type

Less than one percent of the land in the Rock Springs District is of the broadleaf tree vegetation type, with aspen the major species. Aspen stands with more than 16 percent canopy cover are classed in the broadleaf tree type. Wetter north and west facing slopes characterize occurrence of

the broadleaf tree type in this district. Understory growth includes a diversity of species providing a high percentage of plant cover and litter accumulation.

Barren and Waste Type

Less than one percent of the district is classified as barren and waste. The criterion for barren classification calls for less than two percent vegetal cover, primarily badlands. Waste is considered to be those areas unusable for livestock grazing because of the density of the vegetation. The barren and waste type occurs in small scattered acreages.

Threatened and Endangered Plants

Three plant species are candidates for proposal as threatened plant species on BLM lands in the Rock Springs District. These species are *Astragalus proimanthus*, *Lesquerella macrocarpa*, and *Physaria condensata*. As a result of intensive inventories conducted in 1981 and 1982, all of these plants have a recommended status of "sensitive." These plant species are generally found on shale ridges and slopes that are clay and calcareous in nature or on naked clay flats and hills at elevations ranging from 6,500–7,800 feet. These plants and their habitats are to be protected as directed by the Endangered Species Act until further information on the status of the species becomes available. *Lesquerella macrocarpa* is known to occur in the Alkali Draw and Honeycomb Buttes WSAs.

Fire Management

BLM fire management plans developed or being developed in all four resource areas advocate limited suppression policies. Limited suppression means that fires in many areas would be allowed to burn if conditions are within prescribed limits, e.g., wind speed, percent of humidity. This reflects the management finding that much of the district's resources would benefit from some fire. In all cases fire that threatened human life or private property would be suppressed.

Site-specific differences between the limited suppression policy as described here, and wilderness fire management in each WSA, are described in the appropriate site-specific analysis and Table D-1.

DISTRICT-WIDE ANALYSIS

WILDLIFE

Terrestrial

Wildlife species are an integral component of the natural environment, providing a source of food and recreation to the users of public land. The Rock Springs District provides yearlong habitat for a great variety of species.

Big Game Species

Elk (*Cervus canadensis*) are widely distributed throughout the district and forage on a variety of shrubs, grasses, and herbaceous plants (Martin, Zim, and Nelson 1951). Elk depend on hiding in cover as their main defense mechanism. Their summer range is generally restricted to areas with broken topography and/or tall vegetation. Although most elk herds are found in forested regions, the Sands elk herd, which resides in the Big Sandy Resource Area, occupies desert sagebrush-grassland for most of the year. This herd was reintroduced into historical range from the Jackson herd in the early 1970's. Map D-5 shows crucial winter range distributions for the various Rock Springs District elk herds.

Pronghorn antelope (*Antilocapra americana*) are distributed throughout the Rock Springs District, with preferred habitat usually characterized by the presence of sagebrush, often in combination with rabbitbrush, saltbush, shadscale, and other low-growing shrubs. Because pronghorn antelope depend on running as their main defense, their range is generally restricted to open rangeland. Water distribution and availability undoubtedly play an important role in determining pronghorn antelope summer ranges. Winter ranges vary, with snow depths and forage availability dictating which winter ranges will be used during any given year. Severe winters, with deep, crusted snow and subzero temperatures, move pronghorn antelope to their crucial winter ranges. Map D-6 shows crucial winter range distributions.

Mule deer (*Odocoileus hemionus*) are distributed widely throughout the Rock Springs District and are adapted to a wide range of forage, cover, and browse. Winter browse species make up as much as 75 percent of the mule deer diet and include species such as sagebrush, mountain mahogany, rabbitbrush, serviceberry, and antelope bitterbrush. Because deer depend on hiding in

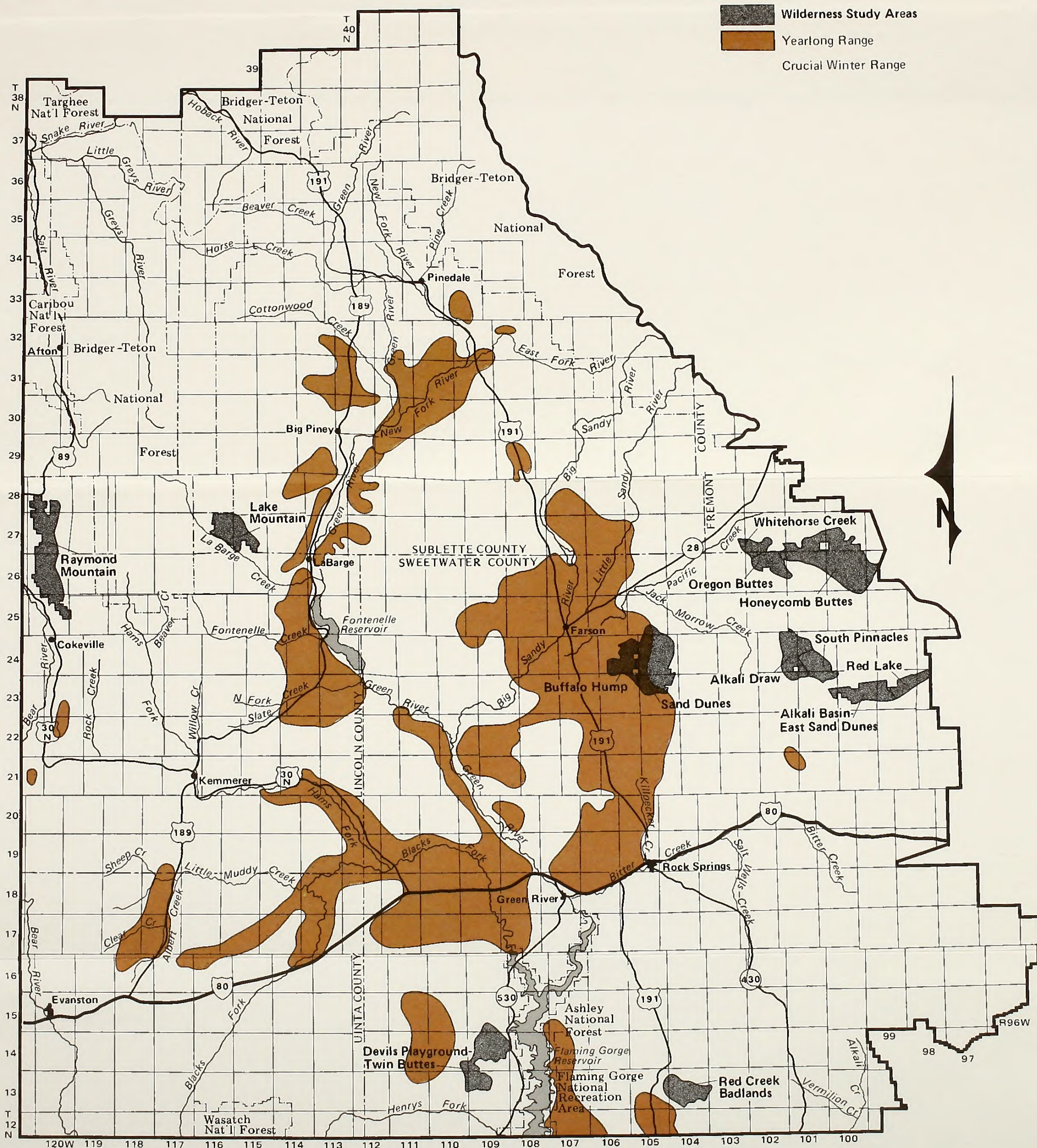
cover as their main defense mechanism, their range is generally restricted to areas with broken topography and/or tall vegetation. The major limiting factor of mule deer populations in the northern region is generally the availability of crucial winter range, which is also true of most deer populations within the district. Weather and snow conditions dictate winter ranges, generally where shrubs are exposed above the snow. Map D-7 shows crucial winter range distributions.

Moose (*Alces alces*) have a rather limited distribution in the district. In the summer, moose may be found in conifer or mixed woodlands interspersed with lakes or streams. Moose winter range includes drainages which support good willow stands. Raymond Mountain and Lake Mountain are the only WSAs which have substantial moose populations. Moose occur irregularly in the other WSAs. For these reasons, a range distribution map has not been included.

Large predators, such as mountain lions, coyotes, swift foxes, and red foxes can be found in the Rock Springs District. An abundance of small mammals, including cottontail rabbits, jackrabbits, white-tailed prairie dogs, ground squirrels, and others, support a large diversity of raptors. (Detailed species lists for small mammals are available for review in the Rock Springs District Office.) Numerous cliffs and rims provide nesting habitat for a variety of raptors such as prairie falcons, ferruginous hawks, golden eagles, great horned owls, red-tailed hawks, and kestrels. Other raptors nesting in the district include merlins, burrowing owls, marsh hawks, swainson's hawks, short-eared owls, long-eared owls, and ravens. Many more species use the district during the winter.

The major upland bird species present in the district are the sage grouse, ruffed grouse, and blue grouse. There are many known sagegrouse strutting grounds in the district.

A surprising variety of waterfowl inhabit the area's waters. Every available open water source, from flowing wells and stockponds to playa lakes and potholes, are used by waterfowl. Shoveler, mallard, widgeon, pintail, gadwall, and teal are the most common nesting species. Canada geese nest, reproduce, and stage on the district, remaining until ice covers the open waters and forces them to migrate south for the winter.



Map D-6
**PRONGHORN ANTELOPE
 CRUCIAL WINTER RANGE**
 Rock Springs District Wide
 Wilderness Environmental Impact Statement





Map D-7
MULE DEER CRUCIAL WINTER RANGE
 Rock Springs District Wide
 Wilderness Environmental Impact Statement

DISTRICT-WIDE ANALYSIS

Furbearers found in the area include the long-tailed weasel, ermine, mink, muskrat, badger, bobcat, and beaver. Otter and marten can also be found on the district, however, their occurrence is rare.

Reptiles common to the area include: northern sagebrush lizard, northern plateau lizard, eastern short-horned lizard, tree lizard, Great Basin gopher snake, and wandering garter snake. The midget faded rattlesnake is restricted to the Green River and its tributaries from White Mountain (north of the town of Green River) south (including Flaming Gorge Reservoir). Amphibians include blotched tiger salamander, Utah tiger salamander, Great Basin spadefoot toad, and northern leopard frog. Habitat affinities and relative abundance for these species are discussed in *Wildlife Inventory of the Salt Wells-Pilot Butte Planning Unit*, which is available for review at the Rock Springs District Office.

Threatened and Endangered Species

Section 7 of the Endangered Species Act requires that the Bureau manage habitat for protection of species in danger of extinction, to ensure their conservation, and to consult with the Fish and Wildlife Service (FWS) on any action which results in a "may affect" decision. The FWS has determined that the following officially listed species may be present in the district: bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), whooping crane (*Grus americana*), and black-footed ferret (*Mustela nigripes*). None are known to inhabit the WSAs.

Bald eagles are common to the district during the winter and migration periods. Bald eagles may occasionally be seen in the Raymond Mountain area during the winter. No bald eagle nesting sites have been located in the district, although potential for nesting opportunity exists around the major river systems and in the foothills of the Wind River Mountains. Significant winter use by bald eagles occurs along the Green River and on the Bear River at Woodruff Narrows.

Although the golden eagle (*Aquila chrysaetos*) is not considered an endangered species, it is protected under the Bald Eagle Act. Perhaps the most abundant resident raptor, these large birds are common yearlong in the district.

Many federal, state, and private agencies and organizations have conducted surveys to deter-

mine the distribution and status of the peregrine falcon in Wyoming. Surveys have failed to locate nesting peregrines within the district, although casual sightings are not uncommon. Recent releases of immature falcons in Jackson, Wyoming, by the Peregrine Falcon Recovery Team (Fort Collins, Colorado), increases the district's possibilities for attracting peregrines to the historical nesting sites found in the district. Nesting and wintering habitat exists within the district, and if they are discovered in the future, consultation with FWS will be initiated to determine essential habitat.

The whooping crane is one of the rarest birds in North America. Populations of these birds have slowly increased from the low levels of 1941. The major migration route of the Grays Lake population in Idaho follows the Green River drainage through the Rock Springs District, and occasional sightings have recently been reported from the Seedskaadee National Wildlife Refuge.

Potential black-footed ferret habitat occurs in the shrub-grass ecosystem within the district. Ground-dwelling small mammals, particularly prairie dogs (*Cynomys leucurus*), appear essential to ferrets for food, and ferrets use their burrows as denning and shelter sites (Clark and Dorn 1981). Because of the low numbers, little is known about the ferret, and thus, management for essential habitat is difficult. Recent discoveries of ferrets in Meeteetse, Wyoming should increase our knowledge of ferrets and aid their management in the Rock Springs District.

Aquatic

The Rock Springs District contains 1,675 miles (approximately 1,500 acres) of streams and 56,000 acres of standing water. Only a portion of this habitat supports game fish (approximately 500 miles of streams and 10,000 acres of standing water). Major streams include: Hams Fork, Smiths Fork, Blacks Fork, Thomas Fork, Big and Little Sandy Rivers, Green River, and Bear River. Major reservoirs include: Viva Naughton, Woodruff Narrows, Kemmerer City, Flaming Gorge, Fontenelle, Big Sandy, and Eden.

The upper reaches of most streams are habitat for cool water game fish. In the lower reaches, the water warms and nongame fish predominate. The Green River is considered a "blue ribbon" trout stream (Banks et al. 1974). See the Wilderness Including Recreation section for a discussion of

DISTRICT-WIDE ANALYSIS

recreational use of the fisheries.

Common game fish inhabiting the district include: mountain whitefish, rainbow trout, cutthroat trout, brown trout, brook trout, lake trout, and kokanee salmon. Densities of typical trout populations in the district range to 500 fish per mile. Nongame species include: roundtail chub, Utah chub, speckled dace, redbside shiner, fathead minnow, mottled sculpin, white sucker, mountain sucker, bluehead sucker, and flannelmouth sucker.

Threatened and Endangered Species

The district contains two varieties of cutthroat trout which are officially listed as rare by the Wyoming Game and Fish Department and considered sensitive by the BLM. "Officially listed species" includes species classified by the Wyoming Game and Fish Department in any category that implies potential extinction. The two varieties are the Colorado River cutthroat (*Salmo clarki pleuriticus*) and the Bonneville or Bear River cutthroat (*Salmo clarki Utah*). The Fish and Wildlife Service is conducting a status review of the Bonneville or Bear River cutthroat trout to determine whether it should be reclassified as threatened and endangered.

The Colorado River cutthroat is the only trout native to the Green River drainage. In the Rock Springs District it is found primarily in isolated tributaries to the Green and Blacks Fork rivers. The Bonneville cutthroat is found only in the Bear River drainage and its tributaries, the Thomas Fork and Smiths Fork. These species are also listed as rare in the Wyoming Game and Fish Department's publication *Current Status and Inventory of Wildlife in Wyoming*. The Bonneville cutthroat is found in the Raymond Mountain WSA. The Colorado River cutthroat is found in the Lake Mountain WSA.

The Colorado squawfish (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and bonytail chub (*Gila elegans*) are regarded as having historical distribution in Wyoming. However, their existence has not been verified within the district. A fisheries distribution and species composition inventory was conducted in the Rock Springs District by Bio/West Incorporated in 1978 and 1981. They concluded the humpback chub, Colorado squawfish, and bonytail chub are probably extinct in Wyoming.

WILD HORSES

The district contains 4,638 wild horses (February 1982). It is estimated that the population is increasing at an average of 17 percent yearly. An active reduction program is ongoing in the district; the total horses in the district will be reduced to 1,500 by fall 1984. The horses range freely over most of the district. The horses of the Divide Basin Wild Horse Herd Management Area (WHHMA) may be affected by management action in six of the Big Sandy WSAs (see Map D-8). A February 1982 inventory counted 2,307 horses in this WHHMA. Current management objectives call for reducing the number to 500 horses and maintaining that population by fall 1984.

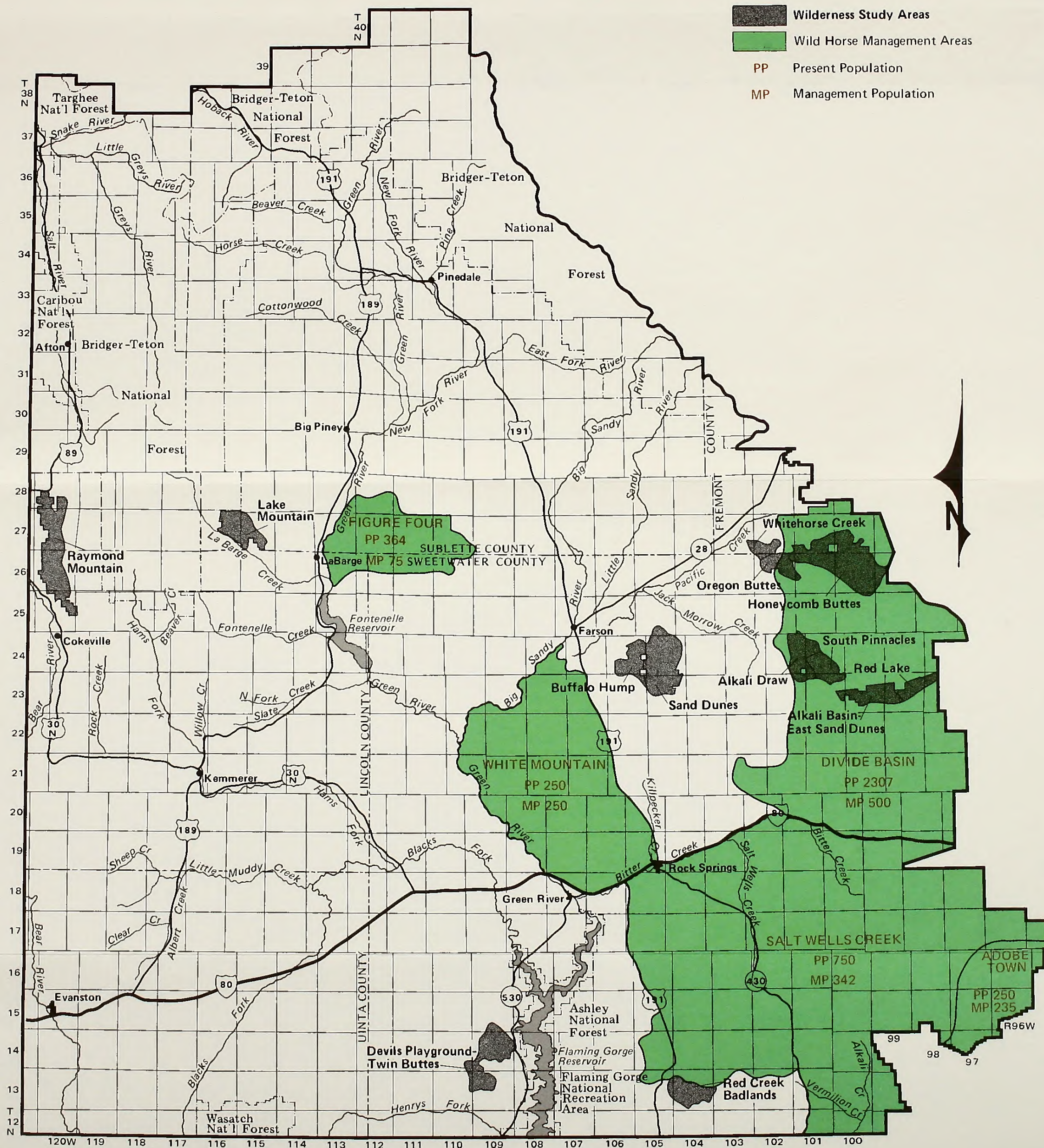
LIVESTOCK GRAZING

All rangelands in the district (approximately 13 million acres) provide year-round and seasonal grazing for livestock (cattle, sheep, and horses). Approximately 45 percent of the rangelands are public and are used in conjunction with state and deeded rangelands. The public rangelands provide approximately 390,000 AUMs (see Glossary) (255,000 cattle, 135,000 sheep) to 426 operators.

Fencing is generally limited within the district. Cattle and horses often run in common in large grazing allotments and sheep are usually herded in large numbers. Livestock water is provided by springs, wells, intermittent and ephemeral streams, pipelines, and by reservoirs. Sheep make extensive use of snow in the winter as a water source. All of the WSAs are available for livestock grazing.

WILDERNESS INCLUDING RECREATION

To facilitate the evaluation of wilderness recreation opportunities, a "wilderness use region" which is primarily based on a five-hour driving distance of Rock Springs, Wyoming, has been delineated (see Map D-9, inside back cover). This wilderness use region encompasses all of Wyoming west of Interstate 25, that portion of eastern Idaho east of Interstate 15, northeastern Utah including the Wasatch Front, and northwestern Colorado.



Map D-8
WILD HORSE MANAGEMENT AREAS
 Rock Springs District Wide
 Wilderness Environmental Impact Statement

DISTRICT-WIDE ANALYSIS

The wilderness use region is also an important concept in evaluating the suitability of a WSA for wilderness designation. It was used in accordance with the BLM Wilderness Study Policy (*Federal Register* Vol. 47, No. 23, 5098-122, 3 February 1982), to evaluate each WSA, and is used in this EIS as a context for determining impacts. The concept has its origins in House Report No. 95-540, on the Endangered American Wilderness Act of 1978, which states that one of the goals of Congress is "creating parks and locating wilderness areas within close proximity to population centers." Therefore, major population centers, especially Standard Metropolitan Statistical Areas (SMSAs), within a days driving time of district WSAs are considered to contain the potential users of the WSAs evaluated in this EIS.

The Wasatch Front area (population 1,154,361) ranges from Provo, Utah on the south to Brigham City, Utah on the north. This population area is four to five hours driving time from Rock Springs. It includes the Salt Lake City-Ogden SMSA (population 936,255) and the Provo-Orem SMSA (population 218,106). Due to the energy development currently occurring in Southwest Wyoming, there is a substantial amount of local interchange between the Wasatch Front and Southwest Wyoming.

Other population centers (not included in the SMSAs) within the wilderness use region include Idaho Falls, Idaho—population 39,590; Casper, Wyoming—population 51,016; Sheridan, Wyoming—population 15,146; Rock Springs, Wyoming—population 19,454; and Laramie, Wyoming—population 24,410. (All population figures are from the 1980 Census of Population and Housing.)

All wilderness areas, areas administratively endorsed as wilderness, and wilderness study areas in the wilderness use region fall within one of four ecoregions (provinces) under the Bailey-Kuchler classification system. The Bailey-Kuchler system has been selected by BLM (and the Forest Service) as the method whereby basic ecosystems are classified to help determine which WSAs would be expanding the diversity of the ecosystem representation in the National Wilderness Preservation System. The provinces represented in the wilderness use region are the Rocky Mountain Forest Province, the Intermountain Sagebrush Province, the Wyoming Basin Province, and the Great Plains Shortgrass Prairie Province. Additionally areas within each province can be categorized into one or more of fifteen potential natural vegetation types. Table D-10 illustrates the ecosystems

of the wilderness areas within the wilderness use region. The ecosystem classification is composed of ecoregions and potential natural vegetation types.

The Bailey-Kuchler Classification system was developed and adopted by the Forest Service for use in wilderness decisions under RARE I and RARE II. This system is a combination of Bailey's ecoregions and Kuchler's potential natural vegetation. Robert G. Bailey (1976) delineated "ecoregions" by their distinctive flora, fauna, climate, landform, soil, vegetation, and ecological climax. A. W. Kuchler (1966) mapped the potential natural vegetation that would occur naturally in a given area if succession were not interrupted by manipulation. The resulting classification defines ecosystem as any potential natural vegetation type within an ecoregion.

The significance of the ecosystem classification is in the determination of the uniqueness of each potential wilderness area, especially in relation to existing wilderness. As can be seen from Table D-10, many BLM WSAs (last column of table) represent different ecosystems than presently exist in the wilderness use region. With the exception of Lake Mountain WSA (an example of the Rocky Mountain Forest Province), all of the WSAs evaluated in this analysis are classified in the Wyoming Basin Province. The Honeycomb Buttes and Red Lake WSAs are Wyoming Basin Province—saltbush-greasewood (type 34), and the other Wyoming Basin WSAs in the Rock Springs District belong to the sagebrush steppe (type 49). There is existing wilderness representative of sagebrush steppe in the other provinces, but none in the Wyoming Basin Province. The wilderness use region analyzed in this EIS covers virtually all of the Wyoming Basin Province.

There are four ecoregions in Wyoming, as defined by Bailey-Kuchler. They are the Rocky Mountain Forest Province, Wyoming Basin Province, Intermountain Sagebrush Province, and Great Plains Shortgrass Prairie Province. The Wyoming Basin Province represents the largest portion of Wyoming (see Map D-10).

Within the wilderness use region there are several national forests and three national parks which provide wilderness recreation opportunities. There are also two national monuments, one national recreation area, and nine national wildlife refuges. Appendix B addresses the wilderness availability in these areas. As an overview there are

DISTRICT-WIDE ANALYSIS

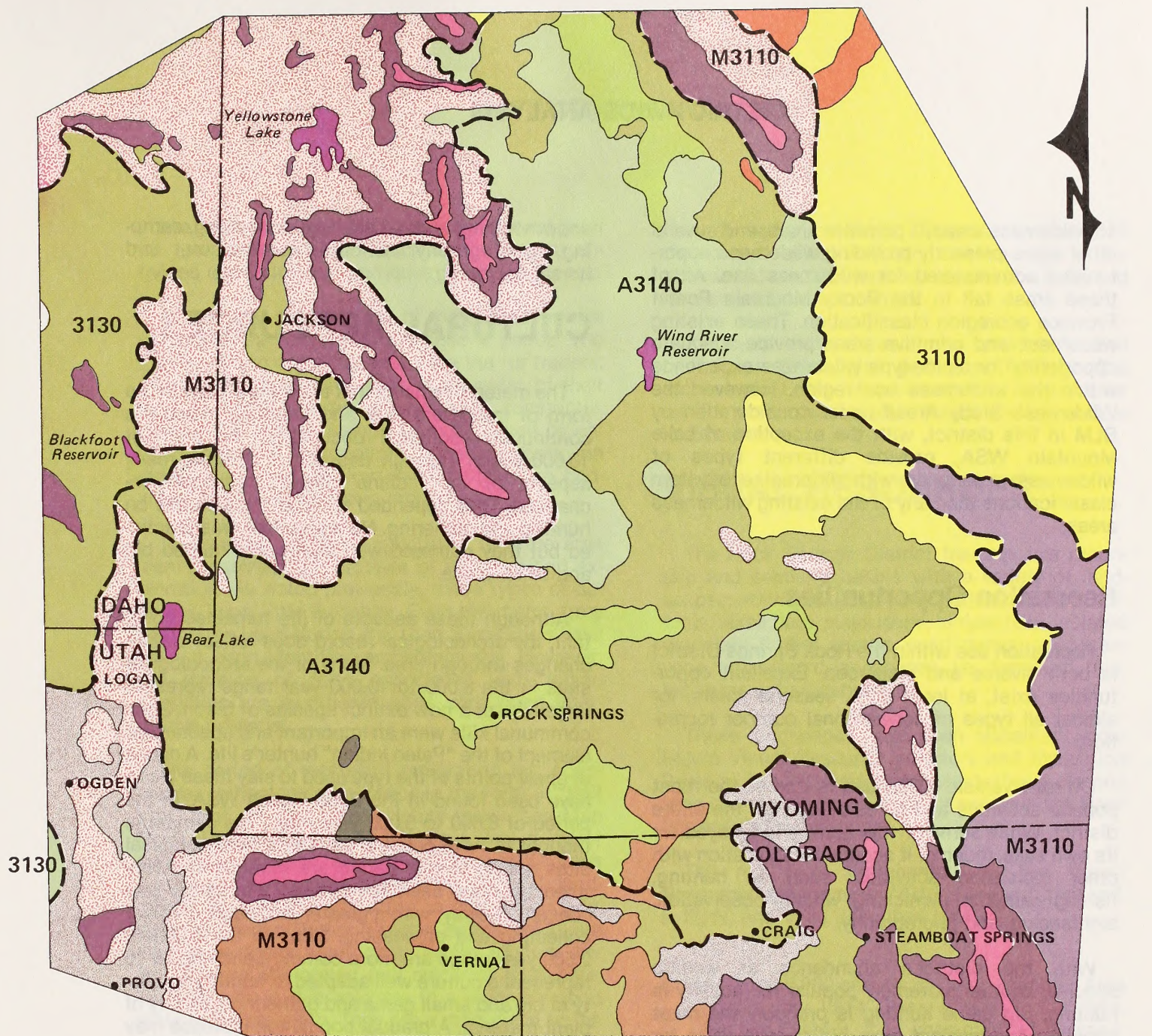
Table D-10

ECOSYSTEM REPRESENTATION IN THE ROCK SPRINGS WILDERNESS USE REGION
(IN ACRES)

<u>Ecoregion and Potential Natural Vegetation Type</u> ^{1/}	<u>Congressionally Designated Wilderness Areas</u>	<u>Administratively Endorsed Wilderness</u> ^{2/}	<u>Wilderness Study Areas (WSAs)</u>
Rocky Mountain Forest Province (M-3110)			
(11) Douglas fir forest	609,125	1,928,504	423,422
(14) western spruce-fir forest	1,306,440	1,171,367	311,102
(17) pine-Douglas fir forest	9,400	0	0
(19) spruce-fir-Douglas fir forest	0	3,000	0
(21) juniper-pinyon woodland	0	205,671	50,503
(31) mountain mahogany-oak scrub	30,088	51,362	54,265
(34) saltbush-greasewood	0	26,358	520
(45) alpine meadows and barren	884,806	708,976	87,570
(49) sagebrush steppe	140,972	29,127	89,732
(57) grama-needlegrass-wheatgrass	0	27,360	0
PRDVINCE TDIAL	2,980,831	4,151,725	1,017,114
Intermountain Sagebrush Province (3130)			
(14) western spruce-fir forest	0	0	11,298
(39) desert (vegetation largely absent)	0	0	14,698
(49) sagebrush steppe	0	0	11,964
PRDVINCE TDIAL	0	0	37,960
Wyoming Basin Province (A-3140)			
(11) Douglas fir forest	0	0	26,834
(15) eastern ponderosa forest	0	0	10,100
(21) juniper-pinyon woodland	0	0	33,000
(34) saltbush-greasewood	0	0	115,195
(49) sagebrush steppe	0	0	209,919
(50) wheatgrass-needlegrass shrubsteppe	0	0	101,275
(57) grama-needlegrass-wheatgrass	0	0	31,379
PRDVINCE TDIAL	0	0	527,702
Great Plains Shortgrass Prairie Province (3110)			
(15) eastern ponderosa forest	0	0	6,423
(57) grama-needlegrass-wheatgrass	0	0	10,089
PROVINCE TOTAL	0	0	16,512

^{1/} The ecosystem classification is composed of ecoregions and potential natural vegetation types. The resulting classification defines as an ecosystem, any potential natural vegetation type within an ecoregion. The ecosystem classification was illustrated on Map B, Ecosystems of the United States, in the RARE II, Draft Environmental Statement, Roadless Area Review and Evaluation, U.S. Department of Agriculture, Forest Service 1978. It is not reproduced in this document, primarily to reduce costs. The RARE II environmental statement is available for review in all BLM and Forest Service offices and most libraries and universities.

^{2/} Areas which have been endorsed by the President but their designation or nondesignation as wilderness is pending Congressional action.

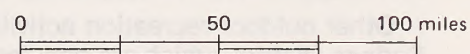


- State Boundaries
- Bailey - Kuchler Ecoregion Boundaries
- M3110 Rocky Mountain Forest Province
 3110 Great Plains Prairie Province
 A3140 Wyoming Basin Province
 3130 Intermountain Sagebrush Province

Potential Natural Vegetation Types

- Mountain Mahogany - Oak Scrub
- Saltbush - Greasewood
- Sagebrush Steppe
- Douglas Fir Forest
- Alpine Meadows and Barren
- Western Spruce - Fir Forest

- Wheatgrass - Needlegrass - Shrubsteppe
- Juniper - Pinyon Woodland
- Foothills Prairie
- Eastern Ponderosa Forest
- Pine - Douglas Fir Forest
- Grama - Needlegrass - Wheatgrass
- Desert (Vegetation Largely Absent)



Map D- 10
BAILEY - KUCHLER ECOSYSTEMS
 Rock Springs District - Wide Wilderness
 Environmental Impact Statement

DISTRICT-WIDE ANALYSIS

15 wilderness areas, 3 primitive areas, and several other areas presently providing wilderness opportunities administered for wilderness use. All of these areas fall in the Rocky Mountain Forest Province ecoregion classification. These existing wilderness and primitive areas provide adequate opportunity for alpine-type wilderness experience within the wilderness use region. However, the Wilderness Study Areas under consideration by BLM in this district, with the exception of Lake Mountain WSA, provide different types of wilderness experience with different ecosystem classifications than any of the existing wilderness areas.

Recreation Opportunities

Recreation use within the Rock Springs District is both diverse and dispersed. Excellent opportunities exist, at least on a seasonal basis, for almost all types of conventional outdoor recreation.

Off-road vehicle (ORV) use is one of the most popular activities and takes place over the entire district. While some of this activity is enjoyed for its own sake, much of it occurs in association with other recreation activities, such as hunting, fishing, camping, picnicking, wildlife observation, sightseeing, and photography.

With the district's abundance of wildlife species, another extremely popular fall activity is hunting. Big game hunting is probably the most popular and prevalent type, but opportunities for waterfowl, upland game, upland game bird, and varmint (see Glossary) hunting are also popular with large numbers of local residents.

The numerous lakes, streams, and rivers within the area make cold water fishing an activity pursued by many local residents, as well as out-of-state visitors. Various species of trout are the most sought after fish. Other water sports (motor boating and waterskiing) are popular on both the Flaming Gorge and Fontenelle reservoirs during the summer season. Many streams and rivers in the district are used for rafting, canoeing, and kayaking.

Other outdoor recreation activities of the Rock Springs District, which are popular with both local residents and visitors on either a year-round or seasonal basis, include: hiking, backpacking, sightseeing, rockhounding, winter sports (skiing,

snowmobiling, and ice skating), picnicking, camping, photography, wildlife observation, and horseback riding.

CULTURAL RESOURCES

The material remains that are visible today in the form of Indian artifacts and features, indicate a continuous aboriginal occupation for the last 10,000 years. Through this period of time, many aspects of the Indians' lifeway remained unchanged. They depended for their subsistence on hunting and gathering. No agriculture was practiced but they gathered wild plants and hunted big and small game.

Although these aspects of life remained constant, the archeological record does reflect certain changes through time. Many of the archeological sites in the 8,000 to 10,000 year range represent large kills of a now extinct species of bison. Such communal kills were an important and spectacular element of the "Paleo Indian" hunter's life. A cache of spear points of the type used to slay these bison have been found in the Sand Dunes WSA. In the period of 8,000 to 5,000 years ago, the climate is thought to have become more arid. Archeological sites dating to this period are infrequently identified, but many seem to represent a transition to a "desert" lifeway, with a greater emphasis on plant collecting and processing. Sites in the 5,000 to 2,500 year range are more common and appear to represent a culture well-adapted to hunting a variety of big and small game and gathering a variety of plant material. A gradual population increase may be evident over the next thousand years, but no major changes in technology or subsistence are apparent. Around 500 A.D. the bow and arrow were adopted, and population at this time seems to have stabilized at a relatively high level. Communal kills of antelope became more common, and the prehistoric period terminated with the adoption of the horse and the coming of the white man.

Evidence of the Indian lifeways is visible today at numerous prehistoric archeological sites. Campsites may be marked by abundant stone chips, fire hearths, roasting pits, grinding slabs, and fragments of burnt bone. Other camp locations may be identified only by the presence of the rings of stone used to anchor "tipis" (see Devils Playground-Twin Buttes WSA). Other sites were the focus of only one activity; i.e., where a herd of game was killed, where plants were roasted, where

DISTRICT-WIDE ANALYSIS

stone tools were made, or where the raw material for tools was obtained. Each of these past activities leaves its own particular type of evidence.

An entirely different set of cultural resources comprises the remains of the historic period. The first whites to enter the area were the fur traders. Like the Indians, these men spent most of their time in small groups and traveled constantly. While none of their campsites are marked by enduring remains, the locations of trading posts and rendezvous sites are known and these are considered important historic properties.

The earliest military expeditions into the area were organized for purposes of mapping and exploration. As noted previously, these types of activities leave little evidence. Even the major army campsites used during the Utah Expedition have not yet been identified archeologically. However, the location of forts associated with Indian hostilities are significant sites with good interpretive potential.

The period of westward emigration left spectacular archeological evidence in the form of "trail ruts" that are still highly visible today (see Map D-11). The populating of the west was a major social phenomenon, and the emigrant trail routes are considered highly significant. Natural landmarks used by the emigrants to guide their way, such as Oregon Buttes (Oregon Buttes WSA), are also considered significant. While modern activities have obliterated trail evidence elsewhere, the trail ruts in this area are in a relatively good state of preservation. They are a monument to the energy and aspirations of our forefathers.

The development of transcontinental communication and transportation also is evidenced by numerous historic sites. The routes of the Pony Express and the Overland Stage are marked by trail ruts and stage stations. Many of the stage station ruins have good interpretive potential. Construction of the transcontinental railroad also left historic sites: workers camps, old grades, abandoned tunnels, ruins of stations, and the tie hackers camps. The stage road connecting Point-of-Rocks (east of Rock Springs) on the Union Pacific railroad, with the gold mining and county seat South Pass City, passed through the Honeycomb Buttes WSA. The settling and economic development of the area related largely to mining and ranching. The remains of old coal mines and associated settlements are frequently found and give good insights into the labors and

lives of earlier residents. Likewise, the record of the local livestock industry can be read in the abandoned ranches, isolated shacks and huts, and herders and drovers camps.

All these cultural resources, prehistoric and historic, are the tangible part of our heritage. The archeological data inform us and the sites inspire us. The resources are often fragile and are always irreplaceable.

VISUAL RESOURCES

The Rock Springs District features low mountain and semiarid basins with a variety of landscapes: rolling sage plains, badlands, river bottoms, alkali flats, playa lakes, juniper hills, isolated mountain timber stands, sand dunes, deep canyons, and altered landscapes, i.e., farmland, mining areas, urban centers, etc.

These landscapes have been classified under BLM's Visual Resource Inventory and Evaluation System. The analysis from which these classes have been taken is available for review at the Rock Springs District Office.

The region is represented by five Visual Resource Management (VRM) classes (Classes I, II, III, IV, and V) as described below:

Class I—The 6,680 acre Scab Creek Primitive Area is the only VRM Class I area in the Rock Springs District. It is characterized by sagebrush hills on the west giving way to steep conifer and aspen-covered mountain slopes. On the eastern side of the area the mountain slopes level off to a rolling conifer-covered bench. Class I classification is applied to wilderness areas and other special designations.

Class II—A river bottom, composed of dense stands of cottonwood and willow with a variety of seasonal color, is one example of a VRM Class II area. Other examples are badlands, sand dunes, forested areas, and high use areas. Management would require that any changes caused by a management activity should not be evident in the characteristic landscape.

DISTRICT-WIDE ANALYSIS

Class III—Juniper offers a variety of texture and color to the region with stands of a few trees to over 100,000 acres. Other examples of VRM Class III areas include areas along major roads where use volume is high and along fringes of Class II areas like Flaming Gorge Reservoir. Management would require that changes should remain subordinate to the visual strength of the existing landscape character.

Class IV—A major portion of the region is covered by rolling sage plains which usually offer little variety in visual character. However, the plains do provide various combinations of color in vegetation and soil, due to changes in weather and season. Management would require that changes may be subordinate to the original composition and character, but must reflect what could be a natural occurrence within the characteristic landscape.

Class V—Altered landscapes are often characterized by a variety of intrusions. This class applies to areas where the naturalistic character has been disturbed to the point where rehabilitation is needed to bring it back into character with the surrounding countryside.

NOISE

The average noise level in the Rock Springs District ranges from 35–40 decibels in rural undeveloped areas, to 78 decibels adjacent to noise sources. The primary noise sources within the Rock Springs District include highways, rail lines, mining operations, and oil and gas drilling. These noise sources can sometimes reach levels significantly greater than 40 decibels. Noise associated with rail lines and oil and gas drilling has resulted in levels up to 78 decibels within some WSAs.

LAND USE CONSTRAINTS

Federal

Within the Rock Springs District, a large number of separate jurisdictional entities exercise certain types of land and resource use controls. The federal sector includes National Park Service (Fossil Butte National Monument, Grand Teton National Park), Bureau of Reclamation (withdrawn

lands in Sweetwater and Lincoln counties), Forest Service (Wasatch, Ashley, Bridger-Teton, and Targhee National Forests), Fish and Wildlife Service (Seedskadee and National Elk Refuge), and the BLM (public lands and mineral estate under certain private lands).

Management of public lands has been delegated to these agencies. Controls are effected through issuance or nonissuance of a variety of leases, permits, licenses, etc. Each authorization to use public lands contains provisions to control that use. Controls exercised by the federal government for the subsurface estate are governed by the statutes authorizing the disposition and use of that estate. Management policy and authority has been greatly clarified by the National Environmental Policy Act of 1969 (NEPA) and the Federal Land Policy and Management Act of 1976 (FLPMA).

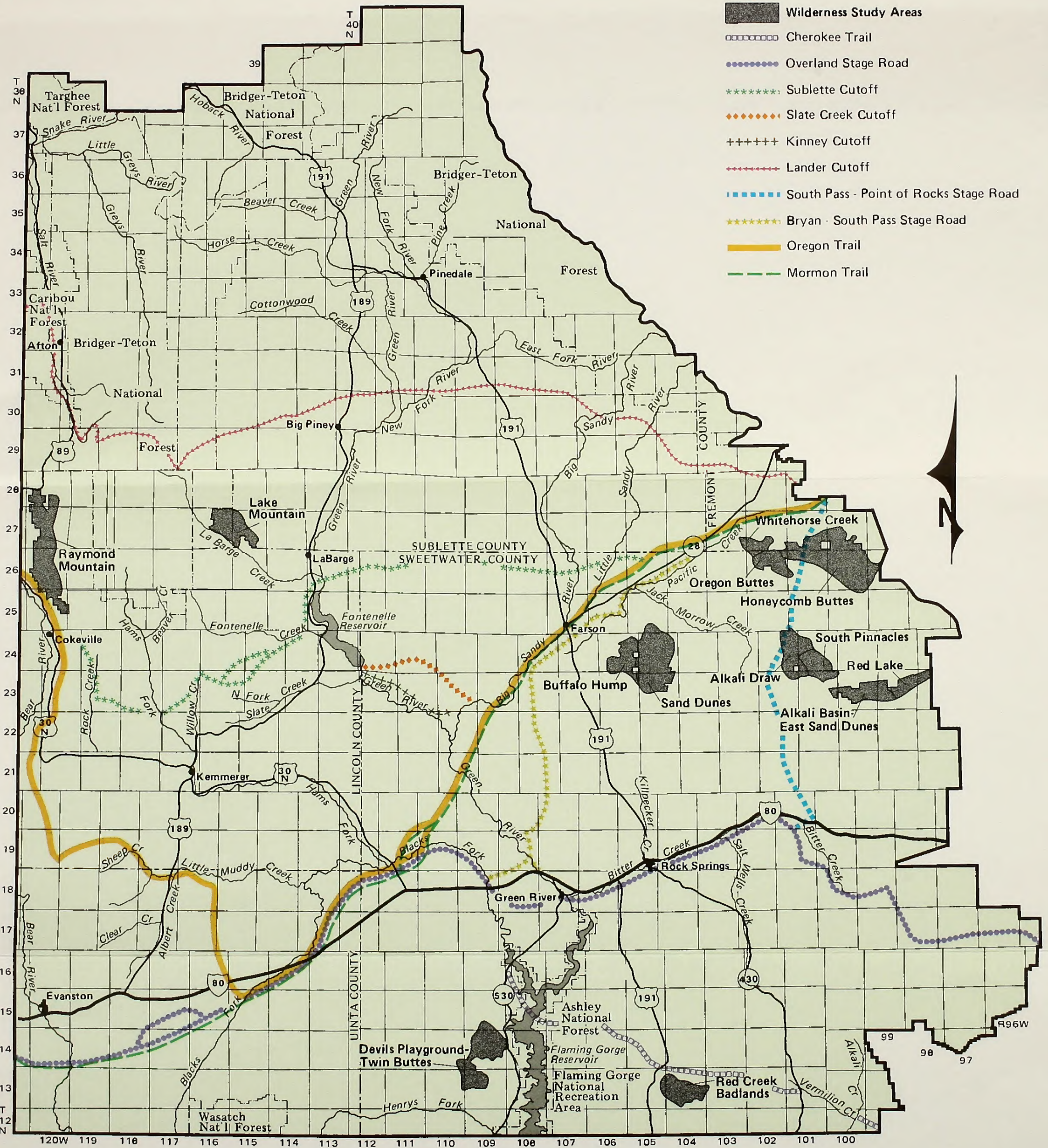
All of the WSAs are within what is called federal “solid block” ownership; none are within the “checkerboard” land ownership pattern associated with the early railroad grants. This pattern of federal ownership promotes the manageability of most WSAs.

State

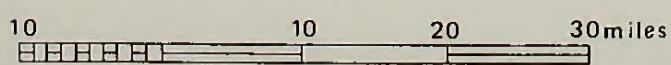
The Wyoming Commissioner of Public Lands is responsible for the administration, leasing, and management of lands owned by the State of Wyoming. Additionally, under State of Wyoming statutes, the state is authorized to perform and administer certain surface land use, planning, and development activities on state, county, municipal, and privately-owned properties.

Except where controls have specifically been delegated by statute to counties or municipalities, Wyoming retains total jurisdiction over nonpublic and privately-owned lands. Certain of these lands were conveyed to the state as part of the act admitting Wyoming to the union. This legislation granted sections 16 and 36 of every township to the state for educational purposes. Use and control of these lands (including mineral leasing, rights-of-way, etc.) is governed by Wyoming law.

The WSAs are public lands with the exception of a few inholdings which usually reflect state ownership of sections 16 and 36. Where these exceptions exist, either the area is “cherrystemmed” (excluded area resembles a cherry with a stem, the stem being the access road to the cherry) and the inholdings subject to development, or land ex-



- Wilderness Study Areas
- Cherokee Trail
- Overland Stage Road
- Sublette Cutoff
- Slate Creek Cutoff
- Kinney Cutoff
- Lander Cutoff
- South Pass - Point of Rocks Stage Road
- Bryan - South Pass Stage Road
- Oregon Trail
- Mormon Trail



Map D-11
HISTORIC TRAILS
 Rock Springs District Wide
 Wilderness Environmental Impact Statement



DISTRICT-WIDE ANALYSIS

changes would be made to consolidate a manageable unit. BLM has met with State of Wyoming officials to determine the state's position on the proposed wilderness areas. Wyoming's management policy concerning state lands within a designated wilderness area is that land exchanges are the preferred course of action (see Appendix A). Prior commitments on these lands, such as oil and gas leases (the most common situation), could present the same wilderness management problem as pre-FLPMA leases, because BLM would be obligated to provide access to either state or private lands for such development. Therefore, land exchanges with the state, including mineral rights, would be the only course of action for areas that are designated wilderness. Where state lands are primarily committed for grazing, there should be few if any management problems, and there would be room to negotiate such things as vehicular access, etc. All state lands within the district WSAs are presently leased, but most have no activity on them. Oil and gas activities on state sections adjacent to the WSAs, are very common.

Local

Under Wyoming statutes counties have authority to effect a wide variety of controls in matters not specifically reserved to the state. The authority applies only to those portions of the county that are unincorporated. A county may regulate and restrict location and use of buildings and structures; and use, condition of use, or occupancy of lands for residency, recreation, agriculture, industry, commerce, public use, and other purposes.

Less than one percent of the lands in the district are owned by county governments. Forty-one percent of the district is public land, three percent is state, 24 percent is private, and the remaining 32 percent is other federal. Use and control of county lands is governed by state law and county ordinances. The county cannot effect planning or zoning control over any lands used in the extraction or production of mineral resources unless reasonably necessary to protect the public good of its citizens. Control over mineral uses is vested in the State of Wyoming under the Wyoming Environmental Quality Act of 1973. This act also authorizes the state to control air and water quality, and solid waste management.

Sweetwater, Lincoln, Uinta, Sublette, and Fremont counties all have some type of a comprehensive plan in compliance with the 1975 Wyoming

State Land Use Planning Act. Zoning ordinances and subdivision regulations have been adopted by counties in most of their major communities.

Nine incorporated towns or cities are in the district. Of these the largest in terms of population are Rock Springs, Green River, Kemmerer, and Evanston. Cities have the authority to effect a master plan, zoning, and other regulatory controls. Cities do not have statutory authority to effect controls over mineral extraction or production within their corporate limits.

Private

Private lands that are "cherrystemmed" could constrain wilderness management under the proposed action and Alternatives 1 and 2. Boundary lines of the WSAs are drawn around these private areas, often resulting in an excluded area within a WSA or "cherrystem." Raymond Mountain, Sand Dunes, and Honeycomb Buttes WSAs have excluded private parcels within the WSA boundaries. The proposed action boundary for the Sand Dunes excludes the private parcel, so no conflicts are anticipated. The "cherrystemmed" area in the Honeycomb Buttes WSA is in the northern portion of the WSA and would not offer severe constraints on wilderness management. Possible management problems could occur in other WSAs considered for wilderness. See the site-specific analyses and maps identifying private parcels.

In summary, all of the respective jurisdictions (federal, state, and county) have authority to impose land and resource use controls, but there are constraints on that authority. Also, the capability to implement such controls varies from nonexistent to adequate. BLM, for example, has adequate authority to recommend wilderness and authority to manage designated wilderness, but pre-FLPMA constraints inhibit wilderness management.

SOCIOECONOMIC CONDITIONS

The WSAs are considered to have a low potential for drawing extensive recreation use, or competing with existing recreation and wilderness areas for users. Most of the use/interest would be from the surrounding counties. As a result, the five counties of Fremont, Lincoln, Sublette, Sweetwater, and Uinta will be used as the economic region of analysis. All the WSAs are located within

DISTRICT-WIDE ANALYSIS

Fremont, Lincoln, Sublette, and Sweetwater counties. Uinta County is included within the economic region because of the large population influx due to the recent energy boom, and the possibility that recreation users would travel a longer distance to use less crowded recreation areas. Teton County, the remaining county in the Rock Springs District, was not included in the economic region because it was assumed little or no economic impact would result in Teton County from wilderness designation of Rock Springs District WSAs.

Population

All counties within the economic region except Sublette have realized large population increases over the past decade. The mineral and energy industries have been the primary stimuli to population growth through increased employment opportunities. Table D-11 shows the population changes

of counties and major communities within the economic region from 1970 to 1980. Sweetwater County realized the largest population increase of all the counties within the economic region, with a ten year growth of 127 percent. Rock Springs and Green River had a combined growth of approximately 16,400 new residents, which accounts for 70 percent of the increase in Sweetwater County's population. Sweetwater County contains 37.3 percent of the population in the economic region. Uinta County realized an 83.4 percent population growth from 7,100 residents in 1970 to 13,021 in 1980. Uinta County contributes 11.7 percent to the population of the economic region. Fremont, Lincoln, and Sublette counties realized much smaller population increases of 42, 40.9, and 21.1 percent, respectively, over the same period. Population levels prior to 1970 can be found in the Rock Springs District Social Economic Profile (SEP), available for review in the Rock Springs District Office.

TABLE D-11

POPULATION OF COUNTIES AND SELECTED COMMUNITIES IN THE ECONOMIC REGION

County and Major Communities	1970		1980		Percentage Change 1970-1980
	Population	Percent of Economic Region	Population	Percent of Economic Region	
Fremont	28,352	42.8	40,251	36.0	42.0
Hudson	381		412		8.1
Lander	7,125		9,126		28.1
Riverton	7,995		9,588		19.9
Lincoln	8,640	13.0	12,177	10.9	40.9
Afton	1,290		1,481		14.8
Diamondville	485		1,000		106.2
Kemmerer	2,292		3,273		42.8
Sublette	3,755	5.7	4,548	4.1	21.1
Big Piney	570		530		-7.0
Marbleton	223		537		140.8
Pinedale	948		1,066		12.4
Sweetwater	18,391	27.8	41,723	37.3	126.9
Green River	4,196		12,807		205.2
Rock Springs	11,657		19,454		66.9
South Superior	197		586		197.5
Uinta	7,100	10.7	13,021	11.7	83.4
Evanston	4,462		6,421		43.9
Lyman	643		2,284		255.2
Mountain View	444		628		41.4
Economic Region	66,238	100	111,720	100	59.3

Source: U.S. Department of Commerce, Bureau of the Census, 1980. Census of Population and Housing, Wyoming.

DISTRICT-WIDE ANALYSIS

Employment and Income

Total employment in the economic region has increased 31.3 percent in the five-year period from 1974 to 1979 (Table D-12). The number of proprietors has increased 15.5 percent during this time period. The mining industry has been the major industrial sector contributing to increased employment opportunities, with a 130 and 94 percent increase in employment in Lincoln and Sweetwater counties respectively, from 1974 to 1979. The major industries within the mining sectors in each county are as follows: oil and gas, uranium, and iron ore extraction in Fremont County; coal, and oil and gas extraction in Lincoln County; oil and gas extraction in Sublette County; trona, coal, and oil and gas extraction in Sweetwater County; and oil and gas extraction in Uinta County (Department of Economic Planning and Development 1981).

The Sand Dunes is the only WSA that currently contributes to employment in the mining sector (oil and gas). All the WSAs allow livestock grazing, provide recreation opportunities, and may contribute a small amount to the number of farm proprietors and total employment in the farm, agricultural services, retail trade, and services sectors. Total labor and proprietors income in the economic region increased 115 percent from 1974 to 1979 (Table D-13). The largest increase in labor and proprietors income was realized in the mining sector. Wage and salary disbursements increased 115 percent over the five-year period, while all proprietors income increased 56 percent and farm proprietors income increased 28 percent.

Income produced from the WSAs would accrue to the farm, agriculture services, mining, retail trade, and services sectors in the form of revenues to proprietors and income to employees from wages and salaries. The primary sources of income from the WSAs would be through livestock

sales from forage production, retail sales from recreation users, and wages paid and revenues received from mineral production from the WSAs.

Tax Revenues

Ad valorem and severance tax revenues from mineral production in 1976 and 1980 in the economic region are shown in Table D-14. Total ad valorem tax collections in the economic region from oil and gas, coal, and trona production increased 244 percent from \$12.9 million in 1976 to \$44.6 million in 1980. From 1976 to 1980, severance tax collections increased 483 percent on natural gas, 1,208 percent on coal, and 238 percent on trona.

Total sales tax revenues have increased 289 percent in the economic region, from \$8.9 million in 1974 to \$34.6 million in 1979 (Wyoming Department of Administration and Fiscal Control 1979). Sweetwater County contained 37 percent of the economic regions population in 1980, and contributed 51 percent of total sales taxes in 1979.

Economic Value

The WSAs in the district provide benefits to society in two forms. Recreation users (consumptive and nonconsumptive) receive benefits in the form of consumer surplus. Other resource users (the livestock, mineral extraction, and timber industries) derive benefits in the form of producer surplus. (See Appendix C for an explanation of consumer and producer surplus.)

Data was not available to fully quantify the existing economic value derived from the WSAs, instead this analysis will provide a qualitative discussion of the change in economic value that would occur from implementation of the proposed action and alternatives.

DISTRICT-WIDE ANALYSIS

Table D-12

EMPLOYMENT BY COUNTY IN THE ECONOMIC REGION

	Fremont		Lincoln		Sublette		Sweetwater		Uinta		Economic Region	
	1974	1979	1974	1979	1974	1979	1974	1979	1974	1979	1974	1979
Total Employment	12,358	17,648	4,657	5,560	2,069	2,248	17,153	21,736	3,743	5,309	39,980	52,501
Number of Proprietors	1,663	1,829	925	980	407	433	908	1,261	572	671	4,481	5,174
Farm Proprietors	735	1,660	557	499	185	166	112	1,100	270	242	1,859	1,667
Nonfarm Proprietors	928	1,169	368	481	222	267	796	1,161	302	429	2,616	3,507
Total Wage and Salary Employment	10,695	15,819	3,732	4,580	1,662	1,815	16,245	20,475	3,171	4,638	35,505	47,319
Farm	341	345	200	203	261	264	112	113	96	97	1,010	1,022
Nonfarm	10,354	15,474	3,532	4,377	1,401	1,551	16,133	20,362	3,075	4,541	34,495	46,305
Private	7,299	12,317	2,811	3,552	995	1,170	14,039	17,645	1,921	3,477	27,065	38,161
Agriculture Services, Forestry, Fish, and Other	56	51	(L)	14	11	(D)	10	14	(L)	22	N/A	N/A
Mining	1,825	3,925	324	1,207	189	189	3,236	6,294	125	(D)	5,899	N/A
Construction	386	1,027	733	351	238	255	4,737	2,729	164	197	6,458	4,559
Manufacturing	419	690	268	360	23	24	338	402	145	109	1,153	1,585
Nondurable Goods	103	227	103	170	12	(L)	244	288	(L)	(D)	N/A	N/A
Durable Goods	316	463	165	190	11	19	94	114	139	(D)	725	N/A
Transportation and Public Utilities	489	709	344	(D)	102	148	1,197	1,619	443	635	2,575	N/A
Wholesale Trade	269	355	136	(D)	0	(D)	542	639	67	105	1,014	N/A
Retail Trade	1,677	2,502	469	582	236	286	2,129	3,220	634	928	5,145	7,518
Finance, Insurance, and Real Estate Services	257	558	63	128	35	38	224	369	56	99	635	1,192
Government and Government Enterprises	1,721	2,496	265	330	161	179	1,626	2,359	280	(D)	4,057	N/A
Federal, Civilian	320	3,157	721	825	406	381	2,094	2,717	1,154	1,064	7,430	8,144
Federal, Military	301	372	99	100	54	63	205	299	56	89	734	923
State and Local	2,434	2,528	92	81	54	41	264	264	75	76	786	719
			530	644	298	277	1,625	2,154	1,023	899	5,910	6,502

Source: Wyoming Department of Administration and Fiscal Control, Division of Research and Statistics, 1981 Wyoming Income and Employment Report.

Note: (D) is shown to avoid disclosure of confidential information.

(L) is shown for sectors with less than 10 wage and salary jobs.

Table D-13

LABOR AND PROPRIETORS INCOME BY COUNTY IN THE ECONOMIC REGION

	Fremont		Lincoln		Sublette		Sweetwater		Uinta		Economic Region	
	1974	1979	1974	1979	1974	1979	1974	1979	1974	1979	1974	1979
Total Labor and Proprietors Income ^{1/}	101,262	256,417	41,931	81,424	19,721	33,824	194,023	385,546	26,686	69,095	383,623	826,306
Wage and Salary Disbursements	79,754	211,368	34,205	63,250	12,891	21,877	176,269	345,062	22,932	60,254	326,051	701,791
Other Labor Income	5,683	25,150	2,181	7,247	741	1,645	9,495	27,921	1,201	4,508	19,301	66,471
Proprietors Income	14,825	19,919	5,545	10,927	6,089	10,302	8,259	12,563	2,553	4,333	37,271	58,044
Farm	2,041	32	1,970	3,074	3,554	6,997	791	1,106	735	1,407	9,091	11,616
Nonfarm	12,784	19,887	3,575	7,853	2,535	3,305	7,468	12,457	1,818	2,926	28,180	46,428
By Industry												
Farming	4,559	3,967	3,217	5,019	5,361	9,816	1,516	1,236	1,397	2,439	16,050	22,477
Nonfarm	95,703	252,450	38,714	76,405	14,360	24,008	192,507	384,310	25,289	66,656	366,573	803,829
Private	75,630	217,782	34,153	67,849	11,593	19,689	177,885	335,203	17,336	54,587	316,597	713,120
Agricultural Services, Forestry, Fish, and Other	242	428	113	273	94	(D)	(L)	149	(L)	131	N/A	N/A
Mining	27,592	106,251	7,530	32,249	3,306	4,327	46,861	160,102	1,492	(D)	86,781	N/A
Construction	8,005	19,499	11,378	7,219	3,436	5,268	78,279	65,207	2,010	4,566	103,108	101,759
Manufacturing	4,233	10,223	2,317	4,835	441	295	4,216	7,976	1,225	1,330	12,432	24,659
Nonfarm Goods	732	2,979	617	1,775	64	(L)	2,885	5,253	(L)	(D)	N/A	N/A
Durable Goods	3,501	7,224	1,700	3,060	377	247	1,331	2,723	1,192	(D)	8,101	N/A
Transportation and Public Utilities	5,506	13,886	5,327	(D)	1,286	2,870	15,537	37,547	6,289	13,495	33,945	N/A
Wholesale Trade	3,285	5,916	1,867	(D)	76	(D)	5,851	10,953	582	1,608	11,661	N/A
Retail Trade	11,592	25,008	3,195	5,487	1,514	3,201	13,502	30,126	3,597	7,698	33,400	71,520
Finance, Insurance, and Real Estate Services	2,837	7,898	913	2,540	328	843	2,181	5,445	520	1,416	6,779	18,142
Government and Government Enterprises	12,338	28,673	1,513	3,019	1,112	2,267	11,412	35,698	1,578	(D)	27,953	N/A
Federal, Civilian	20,073	34,668	4,561	8,556	2,767	4,319	14,622	31,107	7,953	12,069	49,976	90,719
Federal, Military	3,556	6,127	1,041	1,554	625	919	2,608	5,540	623	1,430	8,453	15,570
State and Local	498	634	153	201	240	211	458	669	124	188	1,473	1,903
	16,019	27,907	3,367	6,801	1,902	3,189	11,556	24,898	7,206	10,451	40,050	73,241

^{1/} Reported in thousands of dollars.

Source: Wyoming Department of Administration and Fiscal Control, Division of Research and Statistics, 1981 Wyoming Income and Employment Report.

Note: (D) is shown to avoid disclosure of confidential information.

(L) is shown for sectors with less than 10 wage and salary jobs.

Table D-14

MINERAL PRODUCTION AND TAX REVENUES BY COUNTY IN THE ECONOMIC REGION

	Fremont		Lincoln		Sublette		Sweetwater		Uinta		Economic Region	
	1976	1980	1976	1980	1976	1980	1976	1980	1976	1980	1976	1980
Crude Oil												
Production 1/	6,804,091	6,229,773	188,924	132,234	3,397,292	1,951,420	7,536,204	9,959,104	11,039	3,633,587	17,957,550	21,906,118
Ad Valorem Production Tax 2/	2,094,024	3,984,147	96,753	156,884	1,644,431	1,558,273	3,348,690	7,447,554	6,738	3,241,778	7,190,636	16,388,636
Severance Tax	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Natural Gas												
Production 1/	38,629,979	53,983,673	7,714,086	11,167,328	44,909,382	46,291,372	73,021,606	115,087,044	3,636,377	22,949,460	167,911,430	249,478,877
Ad Valorem Production Tax 3/	682,491	5,039,805	204,875	1,061,937	889,469	3,139,907	1,724,641	10,039,370	66,915	2,582,470	3,568,391	11,864,089
Severance Tax 4/	447,910	3,149,485	134,456	663,628	583,747	1,962,197	1,131,859	6,273,822	43,915	1,613,842	2,341,887	13,662,974
Coal												
Production 1/			2,728,029	5,083,240			1,937,891	7,191,938			4,665,920	12,275,178
Ad Valorem Production Tax 5/			1,057,469	3,799,798			618,023	4,735,416			1,675,492	8,535,214
Severance Tax 6/			720,200	6,139,079			420,911	7,650,696			1,141,111	13,789,775
Trona												
Production 1/							7,379,792	11,771,985			7,379,792	11,771,985
Ad Valorem Production Tax 7/							514,962	7,783,519			514,962	7,783,519
Severance Tax 8/							1,771,150	5,988,997			1,771,150	5,988,997

1/ Taxable production is based on the previous year.

2/ Mill levy of 58.175 and 63.196 used in the 1976 and 1980 tax years. This levy was the average for all counties in Wyoming.

3/ Mill levy of 60.949 and 64.008 used in the 1976 and 1980 tax years. This levy was the average for all counties in Wyoming.

4/ Severance tax rate of 4 percent calculated on taxable production.

5/ Mill levy of 58.732 and 64.990 used in the 1976 and 1980 tax years. This levy was the average for all counties in Wyoming.

6/ Severance tax rate of 4 and 10.5 percent in 1976 and 1980 on taxable production.

7/ Mill levy of 69.780 and 71.480 used in the 1976 and 1980 tax years. This levy was the average for all counties in Wyoming.

8/ Severance tax rate of 4 and 5.5 percent in 1976 and 1980 on taxable production.

Sources: Wyoming Department of Economic Planning and Development, Mineral Division. 1980 Wyoming Mineral Yearbook, Cheyenne. 1981 Wyoming Mineral Yearbook, Cheyenne.

Wyoming Department of Revenue and Taxation, Ad Valorem Tax Division. 1976 Annual Report, Cheyenne. 1980 Annual Report, Cheyenne.

N/A indicates the data was not available.

DISTRICT-WIDE ANALYSIS

Lifestyles and Attitudes

Up until the early 1900's southwestern Wyoming's economy had been structured around agriculture and a rural way of life, with the only industrial development being the Union Pacific Railroad and its associated coal mines. Oil and gas production in the economic region began in the 1920's as the demand for coal decreased and oil production increased to power the railroad's diesel locomotives and provide heating fuels.

The trona mines and soda ash processing plants provided a new industrial base in Sweetwater County in the early 1950's. The soda ash, and oil and gas industries have increased their share of the region's economic base up through the present times. Coal mining resurged in order to provide fuel for newly constructed electric generating plants (the Jim Bridger Power Plant located in Sweetwater County and the Naughton Power Plant located in Lincoln County), and export to western and midwestern companies. The construction of natural gas sweetening (removal of hydrogen sulfide (H_2S) from the gas) plants in Uinta County has provided the latest economic stimulus to the region.

The oil and gas industry and construction of major industrial projects are typified by periods of boom and bust. The town of Evanston is currently undergoing boom development from the construction of two gas sweetening plants and the high level of oil and gas exploration and development in the region. Rock Springs and Green River are recovering from the rapid development that occurred during the mid-1970's as a result of the construction of the Jim Bridger Power Plant concurrent with soda ash industry expansion.

Lifestyles in the economic region today result from the mixing of people from many diverse backgrounds into one conglomerate group. Major influences on this group are from agriculture and mineral and energy industries which make up the economic base of the region.

Although studies of recent public attitudes toward wilderness may be incomplete, the following surveys were used to reach conclusions about attitudes of the wilderness clientele within the Rock Springs wilderness use region:

1. A University of Wyoming survey (Warren and Warder) of only 175 Wyoming residents.
2. Opinion Research Corporation surveys conducted in 1978 of Montana, Idaho and Wyoming residents.
3. Congressman Cheney's 1979 and 1981 questionnaires sent to Wyoming's voting public.
4. Other national surveys and polls, such as Gallup.

An analysis of public attitudes based on each of these sources is contained in Appendix D. These sources indicate that most people perceived wilderness as a "lock up" of natural resources, and many perceived it as only for the select few. Surveys conducted during the Forest Service's RARE II process indicated widespread misunderstanding of wilderness.

Most Wyoming residents felt that enough wilderness already existed, and that any wilderness designation should not unreasonably affect economic growth. The public also felt that wildlife values are a key associated value of wilderness and deserve special consideration. Public attitudes seem to favor a hard look by BLM before proposing additional wilderness. Careful consideration of public attitudes and values should be an integral part of any wilderness decisions by the federal government. In the final analysis, public comment on BLM's wilderness study results, this EIS, and Congressional debate will make the ultimate determination of what the public wants.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

RATIONALE FOR IMPACT ANALYSIS

Two key concepts must be clear before the impact analysis can be understood. First, wilderness values (and other natural resource values) will decline under either nonwilderness or wilderness management. This is true in all of the district WSAs because pre-FLPMA commitments will inevitably result in further disturbance to these resources. It must be clear that the decline in wilderness values such as solitude, and other values, would occur under wilderness alternatives due to the constraints on BLM's wilderness management; not wilderness designation itself.

The second concept necessary to understand the impact analysis is that all impacts, to natural resources as well as to socioeconomic conditions, are measured in relation to the present (1982) environment. Any increase in development or production which would be reasonably expected to occur under the alternatives will be shown as a beneficial economic impact. However, another "school of thought" views anything short of full production or development as an adverse impact, due to the preclusion of some opportunities. These opportunity costs are addressed in socioeconomic conditions.

Pre-FLPMA commitments as discussed in Chapter 1, BLM Wilderness Management Policies, affect BLM management opportunities in the WSA. This constraint will continue until the valid existing rights from pre-FLPMA commitments expire. Due to these constraints, similar impacts would occur under either wilderness or non-wilderness alternatives. As an example, for natural resources (soil, water, vegetation, etc.) there would be a significant difference between the quantity and quality of the existing natural resources within a WSA and their future condition after oil and gas activities occur. Figure D-1 illustrates the impacts in relation to the present environment, from implementation of wilderness or nonwilderness management. Note that under wilderness management the adverse impacts on the natural resources are less than under nonwilderness management. When impacts occurring under wilderness management are compared to the impacts occurring under nonwilderness management, the impacts are relatively beneficial. Similarly, wilder-

ness values of a WSA may be adversely impacted under wilderness management, although not to the degree of nonwilderness management. Figure D-1 is applicable to wilderness values in all of the 13 WSAs evaluated, due to the large number of pre-FLPMA leases and the high probability of exploration and possibly, development activity.

Figure D-2 illustrates the socioeconomic impacts of wilderness and nonwilderness management. In this instance, the pre-FLPMA land use constraints affect socioeconomic conditions in a beneficial manner under wilderness or non-wilderness management. Nonwilderness management would have the most beneficial impacts, but wilderness management would also have beneficial impacts. Notice that in Figure D-2 the separation between the nonwilderness and wilderness management lines represents opportunity costs in nearly all cases. Again, the beneficial impacts are a result of pre-FLPMA oil and gas activity, not management options.

Due to the significant effect oil and gas activities have on impacts in this analysis, Appendix E contains a brief description of the sequence of oil and gas activities and also includes the Wilderness Protection Stipulation, which is attached to post-FLPMA leases in WSAs.

ASSUMPTIONS AND ASSESSMENT GUIDELINES

The following assumptions and guidelines were used for impact analysis:

1. Under the nonwilderness alternative for each WSA, the Management Framework Plans (MFPs) for each planning unit were used to determine the kinds of allowed activities and resultant impacts.
2. The impacts of future developments and the magnitude of these impacts were based on the mineral potential of a given WSA and any existing commitments, such as pre-FLPMA leases, that would affect the WSA. It is assumed that most lessees would make every attempt to determine oil and gas potential through further exploration and drilling.

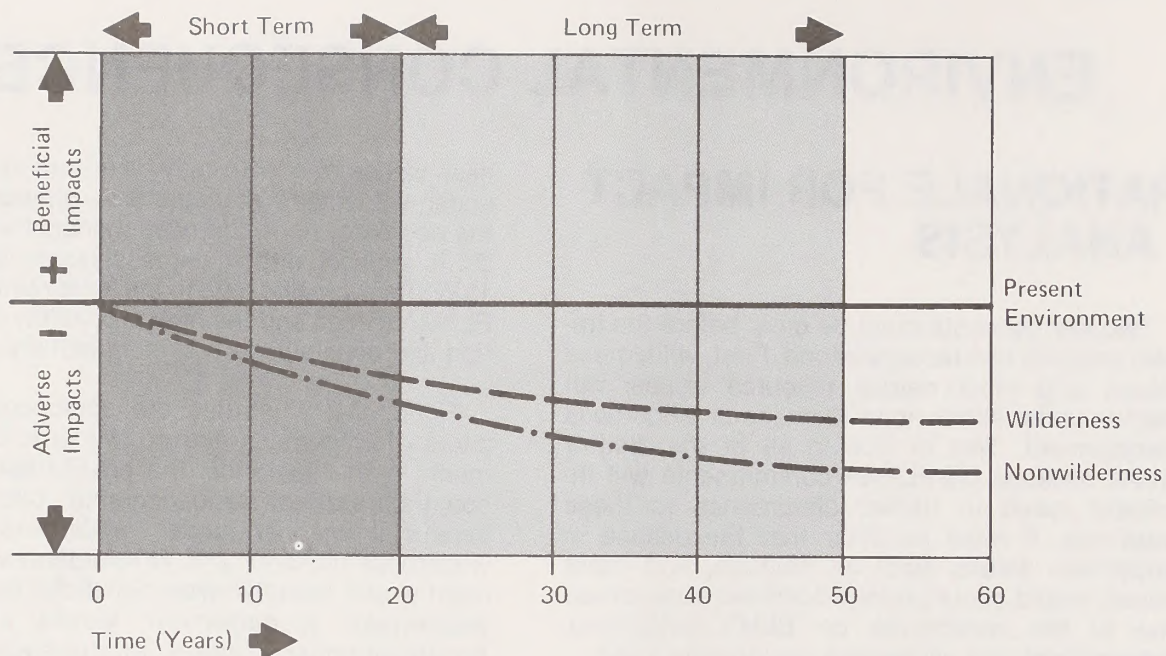


Figure D-1
NATURAL RESOURCE IMPACTS

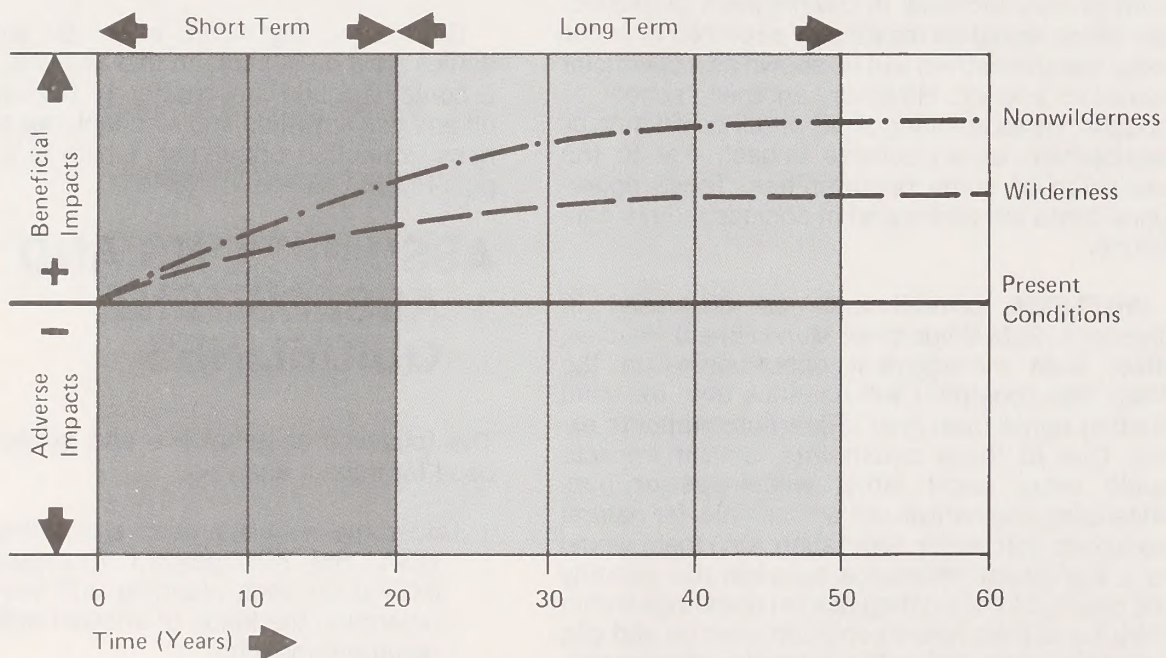


Figure D-2
SOCIOECONOMIC IMPACTS

DISTRICT-WIDE ANALYSIS

3. It is assumed that any hydrocarbons present in a WSA can be discovered within the term of the lease.
4. It is assumed that all discoveries on pre-FLPMA leases would be produced onsite. Under wilderness management discoveries on post-FLPMA leases would be produced offsite where possible.
5. The cessation of oil and gas activity under wilderness management would not occur until after any discovered oil and gas was recovered.
6. Under wilderness management it is assumed that those unleased areas would not be leased, and development of post-FLPMA leases would be severely constrained by such requirements as offsite drilling.
7. Mineral potential in the Lake Mountain, Raymond Mountain, Sand Dunes, Honeycomb Buttes, Oregon Buttes, Whitehorse Creek, and Devils Playground-Twin Buttes WSAs was determined from BLM mineral reports (BLM 1981c-g). Mineral potential (largely oil and gas) in the remaining WSAs was determined from existing information such as adjacent well sites, Known Geologic Structures (KGS), and existing unit agreements between lessees, where exploration or production is actively proceeding.
8. Visitor-use data was not available in most of the WSAs, primarily due to limited public use of the WSAs. Where possible, BLM has estimated visitor use and assumed that most users (75 to 100 percent) would be regional residents.
9. It is assumed that adequate staffing to properly manage designated wilderness areas (and alternative management areas) would be provided to manage identified values on the ground.
10. For purposes of analysis three timeframes are used: short term, long term, and very long term. Short term is less than 20 years (usually 5 to 10); long term is 20 to 50 years; and very long term indicates 50 to 100 years or more.
11. Impacts are measured as negligible (not measurably distinct from no impact), minor (the probable impact would affect less than one-third of the resource), moderate (the probable impact would affect more than one-third but less than two-thirds of the resource), and high (the probable impact would affect more than two-thirds of the resource).
12. It is assumed that the air quality class (a management designation at the discretion of the State of Wyoming) within a WSA will not change from the existing class under either wilderness or nonwilderness management.
13. It is assumed that state inholdings within WSAs designated as wilderness would be exchanged for equally valuable lands in other areas. This exchange would consider mineral values and would ensure that the State of Wyoming does not lose any mineral revenues. Private inholdings could be treated similarly if the owner wished to consider an exchange; but this is not to say that such exchanges would be considered in all areas proposed for wilderness designation.

IMPACTS OF THE PROPOSED ACTION

Interdisciplinary team analysis has shown that the following resources or resource values would be affected by the proposed action and alternatives: Air Quality, Topography, Paleontological Resources, Soils, Water Resources, Vegetation, Wildlife, Wild Horses, Livestock Grazing, Wilderness Including Recreation, Cultural Resources, Visual Resources, Noise, Land Use Constraints, and Socioeconomic Conditions. The specific impacts of the proposed action (designation of two WSAs, or 57,900 acres as wilderness, and nonwilderness management of 11 WSAs, or 160,281 acres—see Table D-2) are as follows:

Air Quality

Under the proposed action minor adverse impacts would occur to air quality. It is expected that there would be a slight increase in total suspended particulates (TSP) and other pollutants in the district. This increase would be due to anticipated oil and gas exploration and possible development.

Changes from air quality Class II to Class I, through application to the State of Wyoming, could be made but is not probable within the two WSAs that are proposed for wilderness. This could

DISTRICT-WIDE ANALYSIS

conceivably eliminate adjacent up-wind development of any industry which would have a detrimental effect on air quality within the proposed wilderness areas. However, this is unlikely; BLM's wilderness management policy is to "manage designated wilderness areas as Class II unless they are reclassified by the state" (BLM 1981a).

Topography

Under the proposed action minor adverse impacts would occur to topography, due to expected oil and gas exploration and possible development.

Paleontological Resources

Under the proposed action minor adverse impacts would occur to paleontological resources. Alkali Draw, South Pinnacles, and Whitehorse Creek WSAs would incur moderately adverse impacts, based on projected disturbances and activities, largely associated with the oil and gas industry. Highly adverse impacts could be experienced in Oregon Buttes WSA, depending on the extent of oil and gas activities. No impacts to paleontological resources would be experienced in the Devils Playground-Twin Buttes WSA, due to the low levels of disturbance anticipated. No impacts would be experienced in the Honeycomb Buttes WSA, due to wilderness protections afforded under the proposed action.

Soils

Under the proposed action minor adverse impacts would occur to soils due to oil and gas development; off-road vehicle use in most areas not designated wilderness; and fewer restrictions on other public uses of the areas. In Red Creek Badlands and Honeycomb Buttes WSAs, beneficial impacts are anticipated. The proposed action would have a beneficial impact on the soils in the Red Creek Badlands WSA because of the designation of the Red Creek Watershed ACEC. The ACEC management plan would include erosion control improvements which would stabilize soils. Soils in the Honeycomb Buttes WSA would benefit slightly under the proposed action because of the restrictions on vehicle uses under wilderness management.

Water Resources

Under the proposed action negligible impacts would occur to water resources. Most of the WSAs have so little water that impacts can be avoided or mitigated. In four WSAs, Lake Mountain, Raymond Mountain, Alkali Draw, and South Pinnacles, minor adverse impacts would occur as a result of anticipated oil and gas development.

Water resources in the Red Creek Badlands WSA would benefit under the proposed action. A watershed ACEC is part of the proposed management of the Red Creek Badlands WSA. In accordance with the ACEC management plan, measures will be implemented by BLM to improve water quality and reduce erosion in the Red Creek watershed, resulting in beneficial impacts. The ACEC management plan incorporates the recently completed Red Creek Watershed Management Plan and in addition, addresses other aspects of resource management.

Vegetation

Under the proposed action minor adverse impacts would occur to vegetation due to oil and gas development, vehicle use in most areas not designated wilderness, and fewer restrictions on other public use of the WSAs.

The only WSAs with anticipated beneficial impacts are Red Creek Badlands and Honeycomb Buttes. In Red Creek Badlands WSA, the ACEC management plan would benefit vegetation. Vegetation in the Honeycomb Buttes WSA would remain the same under the proposed action because of the restrictions on vehicle use under wilderness management.

Fire Management

Under the proposed action fire management would not be adversely affected. However, fire management in Lake Mountain and Raymond Mountain WSAs would be affected in that some fire suppression activities would be constrained within the ACECs.

*what about
effects on ES?*

DISTRICT-WIDE ANALYSIS

Wildlife

Under the proposed action minor adverse impacts would occur to wildlife. The continuation of oil and gas lease development within and/or adjacent to the WSAs would adversely affect big game populations, regardless of management efforts. However, in the Lake Mountain WSA, big game habitat would be beneficially impacted by the proposed action, as would fisheries habitat. The proposed action would also protect the sensitive Bonneville or Bear River cutthroat trout in Raymond Mountain WSA.

Wilderness designation of the Sand Dunes and Honeycomb Buttes WSAs would partially offset the adverse impacts to the Sands elk herd, which roams over several WSAs. The calving grounds and crucial winter range of this herd would be disturbed by anticipated oil and gas activities in the Whitehorse Creek, Oregon Buttes, Buffalo Hump, and Alkali Draw WSAs. It is likely that the wilderness designation of the Sand Dunes and Honeycomb Buttes WSAs could compensate for some of the adverse impact to this herd, by providing protected habitat and a refuge from increasing disturbances. This is a key aspect of the proposed management, because if no protection were afforded to this unique elk herd, it is likely that the entire herd would be lost. BLM biologists believe that an unprotected herd will eventually seek refuge from disturbances and harassment by returning with wintering southern Wind River herds to their summer ranges.

Wild Horses

Under the proposed action negligible impacts would occur to wild horses. There would be no change in wild horse management under the proposed action. Wild horses are found only in those WSAs in the Big Sandy Resource Area and would be managed in accordance with the Divide Basin Wild Horse Herd Management Area (WHHMA) Plan. This plan will be implemented regardless of wilderness or nonwilderness management. Those WSAs within the wild horse management area (in part or entirely) include Oregon Buttes, Honeycomb Buttes, Alkali Draw, South Pinnacles, Alkali Basin-East Sand Dunes, and Red Lake. There are approximately 2,300 horses (1982) in the wild horse herd management area, and under the Divide Basin WHHMA Plan, the number will be reduced to 500 by 1984.

Outside the Divide Basin WHHMA, wild horses make some use of three additional WSAs (Sand Dunes, Buffalo Hump, Whitehorse Creek). These horses have been determined to be excess and they will be removed. Significant repopulation of areas outside of designated WHHMAs will not be allowed. The proposed action (and other alternatives) does not affect wild horse management objectives which have been previously established. The minor adverse impacts reflected for the Sand Dunes and Buffalo Hump WSAs merely draw attention to the fact that all horses will be removed from these WSAs. BLM wild horse management activities would be slightly constrained in wilderness areas; special permission would be required for some operations in accordance with the special exceptions allowed under the wilderness management policy (BLM 1981a).

Livestock Grazing

Under the proposed action minor beneficial impacts would occur to livestock grazing. This would be a result of an increase in forage production, due to range improvement projects such as vegetation manipulation and additional water developments, if water sources are developed during oil and gas drilling.

Wilderness Including Recreation

Wilderness Values

Under the proposed action moderately adverse impacts would occur to wilderness values, representing a potential loss to the National Wilderness Preservation System (NWPS). This would be due primarily to expected oil and gas activities within most WSAs.

Three WSAs (South Pinnacles, Red Lake, and Whitehorse Creek) would incur highly adverse impacts to their wilderness values, due to anticipated oil and gas activities. Adverse impacts would also occur to the wilderness values in the Lake Mountain, Raymond Mountain, and Red Creek Badlands WSAs, however, the ACECs designated within these WSAs would incidentally protect much of the wilderness character within ACEC portions of the WSAs. Red Creek Badlands WSA lies almost entirely within an ACEC, and the adverse impacts of nonwilderness management would be minor. The Raymond Mountain WSA would have many key values protected, but the effectiveness of the

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ACEC management plan would depend on the oil and gas values identified during the ongoing intense exploration of the Overthrust Belt. A loss of wilderness values would also occur in the proposed Sand Dunes wilderness area, due to anticipated oil and gas activities.

Under the proposed action Honeycomb Buttes WSA would receive the only beneficial impacts from wilderness designation. This would be due to the minimal oil and gas exploration anticipated, since the WSA has low oil and gas potential. Similarly, because of low industry interest in the Buffalo Hump WSA, the nonwilderness recommendation would not result in a loss of existing wilderness values.

The two WSAs proposed for wilderness designation (Sand Dunes and Honeycomb Buttes) would increase the diversity of the NWPS. The Sand Dunes WSA (27,200 acres, of which 16,280 acres are proposed for wilderness designation) is classified as Wyoming Basin Province—sagebrush steppe; the Honeycomb Buttes WSA (41,620 acres) is classified as Wyoming Basin Province—saltbush-greasewood. These two types are not currently represented in the NWPS.

Under the proposed action an additional 57,900 acres of wilderness would be available for use by the population within the wilderness use region. Some of the designated wilderness areas within the wilderness use region are experiencing some overuse, with a subsequent decline in the quality of an individual's wilderness experience. Continued overuse of fragile areas may actually impair the wilderness values. Designation of additional wilderness may help to reduce this problem.

Recreation Opportunities

Under the proposed action negligible impacts would occur to recreation opportunities. Two WSAs would realize an increase in recreation opportunities, and four WSAs would have a decrease. Lake Mountain and Raymond Mountain would realize minor beneficial impacts on recreation opportunities, due to an increase in the quality of hunting opportunities. This increase would be a result of management inside the ACEC and off-road vehicle (ORV) closures outside of the ACEC boundaries.

Designation of the Sand Dunes WSA as wilderness would have a minor adverse impact on recreation opportunities due to the partial closure

of a popular ORV use area. ORV use is one of two major recreational uses in the Sand Dunes WSA, the other being hunting, which is ORV dependent for most hunters in the wilderness use region.

Oregon Buttes and Whitehorse Creek WSAs would realize minor adverse and moderately adverse impacts, respectively, to recreation opportunities. These adverse impacts would be a result of increased oil and gas activity and its subsequent adverse impact to wildlife populations, thereby resulting in a loss of hunting opportunities. Energy related disturbances to wildlife populations would also result in minor adverse impacts to recreation opportunities in the Red Creek Badlands WSA.

Cultural Resources

Under the proposed action minor adverse impacts would occur to cultural resources. However, cultural resources in the Honeycomb Buttes WSA would receive greater protection under the proposed action. The elimination of vehicular use in these areas would result in less accessibility to those persons who illegally collect artifacts, but they would not hike into these areas to do so.

Visual Resources

Under the proposed action minor adverse impacts would occur to visual resources. The topography within most WSAs is such that anticipated oil and gas activities would be visible and would have an adverse impact on at least portions of the WSA. In most cases these adverse impacts would be reversed in the very long term. Following the cessation of production, reclamation, and a period of time for the disturbed area to heal, WSAs may return to their former appearance. The two proposed wilderness areas would automatically receive a VRM Class I rating, which would protect future scenic quality and the natural character of the areas.

Noise

Under the proposed action noise levels in the district WSAs would increase, having minor to moderately adverse impacts. This increase in noise would be a result of anticipated oil and gas development within most WSAs. This adverse impact would be expected to last for the life of the leases. The U.S. Air Force Strategic Air Command's low-level training flights for B-52 bombers

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would continue over the WSAs, constituting a small portion of this adverse impact. However, the Sand Dunes and Honeycomb Buttes WSAs are not affected by these flights.

Land Use Constraints

The proposed action would not conflict with county zoning. However, wilderness management of Honeycomb Buttes and Sand Dunes WSAs would conflict with the management of the state lands within and adjoining the WSAs.

Socioeconomic Conditions

Actual quantitative data for recreation, timber, and mineral resources was not complete for any specific WSA. Without quantitative data from all affected resources, a quantified economic analysis could not be completed. (Appendix C outlines the procedures that would have been used to analyze socioeconomic impacts if data were available.) As a result, this analysis will discuss the socioeconomic impacts and benefits in qualitative rather than quantitative terms.

Site-specific economic analyses were completed on the Lake Mountain and Raymond Mountain WSAs, due to the high industry interest in these WSAs; location (these WSAs are the only ones in the Overthrust Belt); and national interest in the oil and gas found in the Overthrust Belt. Qualitative analyses were completed on the remaining WSAs. Impacts from the proposed action on all WSAs will be included as a portion of this district-wide analysis of impacts. No data is available to estimate if and when many of the projected impacts (e.g., mineral development) would occur. As a result, this analysis will focus on the beneficial and adverse impacts that could result if specific resources in the WSAs were actually developed. In addition, opportunities that are foregone due to constraints of any given alternative will be discussed as opportunity costs (e.g., constraints of an alternative may make it impossible to extract 10 percent of the oil and gas of an area that has had no previous oil and gas activity; this represents an opportunity cost to the oil and gas industry). Therefore, opportunities foregone are described in the narrative analysis of the WSA to show the entire picture, but impacts are measured from the same base as all the other elements of the environment, the present situation.

Population

Oil and gas resources would be the only resources that could potentially impact population under the proposed action. If oil and gas reserves were present but could not be developed, the population of the region may grow at a slightly lower rate for a short period of time. These impacts would be minor, due to the large amount of other available gas reserves in the region.

Employment and Income

Employment and income resulting from the livestock, recreation, oil and gas, and timber industry could be impacted by the proposed action. This impact is generally beneficial.

Six WSAs (Raymond Mountain, Alkali Draw, South Pinnacles, Alkali Basin-East Sand Dunes, Red Lake, and Red Creek Badlands) were identified as having range improvement plans which could be carried out under the proposed action. Some small economic benefits from these improvements could be realized as increased farm proprietor's income from livestock production. No change in employment of the economic region would be expected from this action.

The projected negligible change in recreation use of the WSAs as a result of the proposed action would have virtually no economic impact on the region. Table D-15 was developed to show the impacts (or opportunities) a given change in recreation could have on the economic region, for use in reviewing impacts of all alternatives. A \$250,000 decrease in recreation expenditures in the region is estimated to decrease direct or indirect employment in the region by 9 employees. This would result in a direct loss of approximately \$105,000 in wages and salaries, which would reduce indirect and induced expenditures in the local economy by an additional \$37,000. For most of the WSAs, the proposed action would not alter visitor days and thus produce no impact on the recreation industry.

Implementation of the proposed action was rated as having a moderately beneficial overall effect on oil and gas development in the WSAs. Table D-15 presents the economic opportunities from a given increase or decrease in the annual level of oil and gas production. Oil and gas in all WSAs except Lake Mountain was rated on the basis of potential for production rather than

DISTRICT-WIDE ANALYSIS

Table D-15

PROJECTED EMPLOYMENT REVENUE AND TAXES (1981 Dollars) FROM SPECIFIED LEVELS OF RESOURCE PRODUCTION

Resource	Specified Annual Production	Direct Revenue From Annual Production ^{2/}	Indirect Revenue Generated Annually ^{3/}	Direct Employment ^{4/}	Indirect Employment ^{4/}	Direct Personal Income ^{5/}	Indirect And Induced Personal Income ^{6/}	Ad Valorem Tax ^{7/}	Severance Tax ^{7/}
Recreation	<u>1/</u>	\$ 250,000	\$244,575	7	2	\$104,850	\$ 37,325	-	-
Timber	1,000 MBF	181,300	84,576	5	1	83,900	31,025	-	-
Crude Oil	50,000 Bbls	901,100	483,075	2	2	81,000	100,545	54,800	54,075
Natural Gas	500,000 MCP	1,150,000	616,525	3	3	121,500	150,825	73,400	69,000

^{1/} No specified type of user day is defined, instead use \$250,000 as the increase in recreation expenditures.

^{2/} Direct revenue for recreation is set at \$1,000,000, timber is estimated at \$181.31 per MBF, crude oil price is set at the Sweetwater County assessed valuation of \$18.02 per Bbl, and natural gas price is set at the Sweetwater County assessed valuation of 2.30 per MCP.

^{3/} Business multiplier of 1.9783 for recreation (estimated from the services and retail sectors), 1.4665 for timber, 1.5361 for oil and gas from the BLM Input/Output Models for southern Wyoming and the Upper Main Stem Region of Colorado.

^{4/} Direct and indirect employment for recreation (estimated from the services and retail sectors), crude oil, and natural gas from the BLM Input/Output Model for southern Wyoming. Direct and indirect employment for the timber industry from the BLM Input/Output Model for the Upper Main Stem Region of Colorado.

^{5/} Direct personal income estimated from annual wages paid at \$11,650 per recreation employee, \$14,450 per timber industry employee, and 28,850 per oil and gas industry employee (Wyoming Employment Security Commission, 1981. Second quarter 1981, state and county summary of covered employment and total payrolls by industry.)

^{6/} Type II income multiplier of 1.3559 for the recreation industry, 1.3698 for the timber industry, 2.2413 for the oil and gas industry (BLM Input/Output Model for southern Wyoming and Upper Main Stem Region of Colorado).

^{7/} Average mill levy of 60.813 for crude oil and 63.829 for natural gas; and severance tax rate of 6 percent (Wyoming Department of Revenue and Taxation, Ad Valorem Tax Division, 1981. 1981 Annual Report.)

estimating unknown reserves and projecting the time of development. An increase in oil production of 50,000 barrels (Bbls) per year is estimated to increase direct and indirect employment in the region by 4 employees (Table D-15). The increase in employment would result in an additional \$81,000 of personal income from wages and salaries, which would stimulate an additional \$100,500 in indirect and induced income from spending in the local economy. An increase in natural gas production of 500 million cubic feet (Mmcf) per year would result in approximately 6 direct and indirect employment positions in the region (Table D-15). Wages and salaries from increased employment is estimated to increase direct personal income in the region by approximately \$122,000 per year. An additional \$151,000 of indirect and induced personal income would be generated each year from spending in the local economy. Thus, the district-wide moderately beneficial impacts could be translated into revenues and employment at this rate, if quantified information existed on reserves, production, etc.

Employment and income opportunities in the oil and gas industry presented in Table D-15 could also be viewed as the additional time existing employment and income from oil and gas development would continue (or be shortened, if the resources are withdrawn from production) in the region, if these resources were allowed to be

developed. Whether the oil and gas resources (if present) stimulate additional employment or prolong existing employment will be dependent on the demand for the resources and the cost of producing them.

The Lake Mountain and Raymond Mountain WSAs were identified as having suitable timber resources for commercial harvest. Neither of these areas have had a commercial timber harvest in the past, however, the proposed action would withdraw 9,248 thousand board feet (MBF) of timber from possible production in Lake Mountain and place restrictions on timber harvesting in Raymond Mountain. There would also be 13,328 MBF available for harvesting outside the Lake Mountain ACEC under the proposed action. These actions would only affect employment and income in the timber industry of the region if timber supplies and market conditions reached a point to warrant a timber sale in one or both of these areas (see the Lake Mountain and Raymond Mountain Site-specific Analyses). The 13,328 MBF of timber available outside the Lake Mountain ACEC would represent a beneficial impact on the timber industry because the area was not being harvested previously.

Table D-15 shows that a 1,000 MBF timber sale would require 6 direct employees and stimulate approximately one service sector position. Total per-

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sonal income would increase by approximately \$84,000 and spending in the local economy would generate an additional \$31,025 in indirect and induced personal income.

Revenues and Taxes

Range improvements under the proposed action would cause a very slight increase in direct revenues from livestock production in the region. This increase would be negligible and would only occur if market conditions allowed livestock producers to capitalize on the increased production potential.

Under the proposed action no impacts to the revenues of the recreation industry are anticipated. The adverse impacts to recreation use in the Sand Dunes, Oregon Buttes, Whitehorse Creek, and Red Creek Badlands WSAs would be somewhat offset by the beneficial impacts expected in Lake Mountain and Raymond Mountain WSAs.

If oil and gas reserves are present in the two WSAs proposed for wilderness designation, and if they are withheld from production, the revenues, taxes, and royalties from this production would be foregone. However, the opportunity to develop oil and gas in all of the other WSAs would produce a beneficial impact to the oil and gas industry and subsequently increase revenues and taxes. If the amount of production from these withheld areas is known, Table D-15 can be used to determine the impact. Table D-15 shows the direct and indirect revenues, ad valorem tax, and severance tax that would be foregone by not producing a given amount of oil or gas. Fifty thousand barrels of crude oil would yield approximately \$101,000 in direct revenue and generate an additional \$483,000 from business purchases in the local economy. Ad valorem production tax and severance tax would amount to \$54,800 and \$54,075, respectively (see the assumptions in Table D-15 for price, business multiplier, mill levy, and severance tax rates). In comparison, 500 Mmcf of natural gas is estimated to sell for \$1.15 million and generate \$616,500 in indirect revenues from business purchases in the local economy. Sale of this gas would generate approximately \$73,400 and \$69,000 in ad valorem production tax and severance tax (see the assumptions in Table D-15 for price, business multiplier, mill levy and severance tax rate). No estimate of the ad valorem property tax or sales tax revenues foregone could be made without more precise data on facility requirements and estimates of purchases from the local economy. In addition to tax

revenue received by the county and state where the oil and gas is produced; federal royalties are also paid on oil and gas produced on federal lands. Federal royalties range between 12.5 and 16.67 percent for new gas production and 12.5 and 25 percent for new crude oil production (pers. comm., Kay Stucker 1982). Fifty percent of the federal royalties are returned to the State of Wyoming.

Implementation of the proposed action could affect revenues received by the timber industry over the long term. If timber resources in Lake Mountain are precluded from production, this timber would not be available for the market system and the opportunity to sell this timber and generate revenue would be foregone (see the Lake Mountain Site-specific Analysis). A specific plan has not been developed with the restrictions on timber harvesting in Raymond Mountain, but even with harvesting restrictions, this resource would remain in the forest system and retain its potential for harvest (see the Raymond Mountain Site-specific Analysis). Table D-15 shows that a 1,000 MBF timber sale would produce approximately \$181,000 in direct revenue and an additional \$84,000 in indirect revenue from business purchases in the region. There is no state assessed ad valorem production tax or severance tax on timber production (pers. comm., Bob Sinclair 1982), but the state does receive five percent of the money BLM receives from timber sales. Despite the exclusion of 40 percent of the timber resource in Lake Mountain WSA, socioeconomic impacts are rated slightly beneficial in that 60 percent of the WSA would be open to harvesting where it had not previously been harvested. It is unlikely that market demand would require harvesting of the area, but the proposed action would benefit the timber economy if the resource was needed.

Economic Value

Implementation of the proposed action would allow the livestock industry to maintain its existing level of benefits; or, in some WSAs, a very slight increase would be realized in the level of benefits through increased livestock production. Recreation users would receive virtually no change in benefits if recreation use in the WSAs is maintained. Benefits from oil and gas extraction would increase if oil and gas is developed in more WSAs. If oil and gas development is restricted in some WSAs, there would be a loss (opportunity to produce is foregone) in benefits from the maximum that could be attained. There are currently no benefits received from timber harvesting in the

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WSAs, but adopting the proposed action would preclude the development of timber resources in 40 percent of Lake Mountain WSA and result in foregoing potential benefits.

Summary

Overall impacts on the regional economy (excluding Economic Value) would be moderately beneficial, reflective largely of the increased opportunities for oil and gas development and some minor opportunities for range and timber use, despite some opportunities foregone in all cases.

IMPACTS OF ALTERNATIVE 1 (MAXIMIZE WILDERNESS)

The anticipated impacts of Alternative 1 (wilderness management of all 13 WSAs; 218,181 acres—see Table D-2) would be the same as those identified for the proposed action except for the following:

Air Quality

Under Alternative 1 impacts to air quality would be similar to the proposed action with minor differences in Lake Mountain, Alkali Draw, and Red Creek Badlands WSAs. The air quality in these WSAs would be adversely impacted by expected oil and gas activity, however, the impact would be less under this alternative.

Topography

Under Alternative 1 impacts to topography would be similar to the proposed action with a minor difference in the Lake Mountain WSA. The topography in the WSAs would be adversely impacted by anticipated oil and gas activities despite wilderness designation. However, under this alternative the impact would be slightly less in the Lake Mountain WSA.

Soils

Under Alternative 1 minor adverse impacts would occur to soils, slightly less than under the proposed action. The restriction of wilderness

management on installation of erosion control structures and other MFP actions may hinder erosion control efforts in Red Creek Badlands WSA, but overall impacts would still be beneficial in Red Creek Badlands WSA.

Water Resources

Under Alternative 1 impacts to water resources would be negligible, the same as the proposed action. Two WSAs (Raymond Mountain and Lake Mountain) have surface and ground water permits affected by wilderness designation. However, every effort would be made to accommodate the water right holders, so only a slight impact would be anticipated.

Vegetation

Under Alternative 1 minor adverse impacts would occur to vegetation. Some of the adverse impacts of the proposed action would be eased under this alternative. Red Creek Badlands WSA is the only area which would experience a less beneficial impact because of restrictions on vegetation manipulation efforts under wilderness management. Timber management in Lake Mountain and Raymond Mountain WSAs would be eliminated, resulting in no man-caused change for the resource.

Fire Management

Suppression of naturally occurring fires would usually be precluded. Fire suppression methods would be constrained because motor vehicles would not usually be allowed within the WSAs, except in emergency situations.

Wildlife

Under Alternative 1 impacts to wildlife would be similar to the proposed action (minor adverse) with minor differences in three WSAs. Wilderness management would ease the adverse impacts on wildlife in three WSAs: Alkali Draw, Alkali Basin-East Sand Dunes, and Red Lake. Wilderness designation would benefit wildlife in the very long term, even in WSAs with extensive pre-FLPMA oil and gas leases. This presumes successful rehabilitation of habitat is possible and the reintroduction of displaced wildlife populations is feasible. Despite the protections afforded by wilderness designation, big game species in three

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WSAs (Buffalo Hump, Sand Dunes, and Red Creek Badlands) would continue to be vulnerable to adverse impacts resulting from oil and gas activities conducted outside the WSAs, due to the migratory characteristics of wide-ranging populations.

Livestock Grazing

Under Alternative 1 negligible impacts would occur to livestock grazing. However, under wilderness management, some range improvements (vegetation manipulation) would not be allowed, thereby foregoing the benefits of these improvements. Also, there would be some loss of efficiency for livestock management in that motor vehicles would be excluded from designated wilderness.

Wilderness Including Recreation

Wilderness Values

Under Alternative 1 minor adverse impacts would occur to wilderness values in the district, due to pre-FLPMA oil and gas activities. South Pinnacles, Red Lake, and Whitehorse Creek WSAs would incur highly adverse impacts to wilderness values, despite wilderness designation. Beneficial impacts would occur in the Buffalo Hump, Honeycomb Buttes, and Devils Playground-Twin Buttes WSAs; no impacts are expected in the Alkali Basin-East Sand Dunes and Red Creek Badlands WSAs.

Alternative 1 (Maximize Wilderness) would add 218,181 acres to the National Wilderness Preservation System (NWPS). Only Lake Mountain WSA's 13,970 acres of Rocky Mountain Forest Province-Douglas fir ecosystem classification is currently represented in the NWPS within the wilderness use region. The 51,135 acres of Wyoming Basin Province—saltbush-greasewood and 153,076 acres of Wyoming Basin Province—sagebrush steppe would be unique to the region and add to the diversity of the NWPS.

An additional beneficial impact would be the addition of 218,181 acres to the NWPS for wilderness use by the population within the wilderness use region. It is expected that this addition would help reduce some overuse occurring on some of the designated wilderness areas within the wilderness use region.

Recreation Opportunities

Under Alternative 1 minor adverse impacts would occur to recreation opportunities, due to curtailment of motor vehicle use in wilderness areas. Wilderness type recreational use is not expected to offset losses in motor vehicle-dependent recreation (largely hunting by vehicle) in Alkali Draw, South Pinnacles, Alkali Basin-East Sand Dunes, and Red Lake WSAs; resulting in minor adverse impacts to recreation opportunities in these areas.

A continued increase in visitor use is expected in Lake Mountain and Raymond Mountain WSAs, although the type of recreation use occurring under wilderness management would be different than nonwilderness management (no ORVs, increased backpacking, cross-country skiing, photography; the so-called "nonconsumptive" uses).

The impacts to recreation opportunities in the Sand Dunes WSA are moderately adverse, due to the increased acreage proposed for wilderness (27,200 acres would be designated instead of the 16,280 acres under the proposed action). This would result in a larger area being closed to ORV use.

Minor adverse impacts are expected to occur to recreation opportunities in the Red Creek Badlands WSA where wilderness-type recreation use is not expected to offset the loss of vehicle-dependent recreation use.

Visual Resources

Under Alternative 1 minor adverse impacts would occur to visual resources, but the impact would be slightly less than under the proposed action. Raymond Mountain would incur less adverse impacts under this alternative, and four WSAs (Honeycomb Buttes, Buffalo Hump, Devils Playground-Twin Buttes, and Red Creek Badlands) would experience beneficial impacts due to wilderness management. Adverse impacts to visual resources are still expected in most WSAs, due to anticipated oil and gas activities on pre-FLPMA leases.

Noise

Under Alternative 1 noise levels would increase, having a minor adverse impact, but the noise levels

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would be slightly less than the proposed action. Wilderness management would decrease slightly the adverse impact in Raymond Mountain, Alkali Draw, Alkali Basin-East Sand Dunes, and Oregon Buttes WSAs. The Buffalo Hump WSA would experience a beneficial impact. Increased noise levels are still expected in most WSAs due to anticipated oil and gas activities on pre-FLPMA leases.

Socioeconomic Conditions

Under Alternative 1 minor beneficial impacts would occur to present socioeconomic conditions. Designation of all thirteen WSAs as wilderness would have the least beneficial socioeconomic impact of all alternatives, by precluding more resources from production. Because pre-FLPMA oil and gas leases could still be developed onsite and as there is virtually no present production in most of the WSAs (Lake Mountain, Sand Dunes, and Alkali Draw are exceptions), overall impacts to the economy (oil and gas) would be beneficial.

Population

Reduced total employment in the oil and gas industry could result in a slight slow down in the total population increase of the region. This would be very slight, however, since much of the desired production would still take place even under wilderness designation for all 13 WSAs.

Employment and Income

Virtually no impacts to the livestock industry are anticipated under this alternative. This alternative would not be as beneficial to the livestock industry as the proposed action. However, in the South Pinnacles, Alkali Basin-East Sand Dunes, and Red Lake WSAs, there may be some opportunities for slightly beneficial impacts, due to water improvements incidental to oil and gas activities.

Recreation use of the WSAs is projected to decrease under this alternative. Decreased recreation use in most WSAs could have two possible effects on the recreation industry. The recreation use could shift to a substitute area, and the use and total expenditures would remain virtually unchanged. If a suitable substitute area was unavailable, then recreation use and total recreation expenditures may decline. In view of the large area available and the small percentage of the region that would be affected, negligible impacts are anticipated.

In most WSAs, less oil and gas would be available for development under this alternative than under the proposed action. This could result in decreased total oil and gas industry employment and income, or a shortened total employment time over the long term. The opportunities for adverse impacts on oil and gas industry employment and income would be greater under this alternative. However, the impacts would still be slightly beneficial, due to anticipated oil and gas development on pre-FLPMA leases.

Designation of the Lake Mountain and Raymond Mountain WSAs as wilderness areas would preclude the potential development of timber resources. This could have an impact on employment and income in the long term, if the demand for timber reaches a point to warrant a timber sale in either of these areas. Complete withdrawal of timber resources from potential production could result in less opportunities for the timber industry than any other alternative.

Revenues and Taxes

Implementation of this alternative could actually decrease revenues that are currently received from recreation use of the WSAs. In addition, future revenues from range improvements, oil and gas development (post-FLPMA leases and unleased areas) and timber harvesting would be foregone. Not all range improvements or oil and gas development would be precluded, but all timber harvesting would be precluded. Impacts on direct and indirect revenues, taxes, and royalties would be similar to those identified under the proposed action but greater in magnitude. The magnitude of the impact, in terms of revenues and taxes possibly lost, is shown in Table D-15. A decrease in recreation expenditures of \$250,000 would result in approximately \$245,000 in additional indirect expenditures being foregone by businesses in the local economy. Sales tax revenues would also be foregone if recreational goods were not purchased from local businesses.

Economic Value

Reducing recreation use and foregoing range improvements, precluding some oil and gas exploration and development, and precluding any timber development would reduce benefits from recreation and forego a portion or all benefits that would accrue from increased livestock production, oil and gas development, or timber harvesting.

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Summary

Although this alternative reflects the most adverse circumstances for the regional economy (excluding Economic Value), its overall impact is beneficial. Considerable oil and gas production will take place, no timber production that has previously existed is being curtailed, and no adverse impacts to the livestock industry are anticipated. The slightly adverse impact to the recreation economy probably would not occur, if the recreation use shifts to another area within the region.

IMPACTS OF ALTERNATIVE 2

The anticipated impacts of Alternative 2 (wilderness management of 6 WSAs, or 135,760 acres; nonwilderness management of 7 WSAs, or 82,421 acres—see Table D-2) would be the same as those identified for the proposed action except for the following:

Soils

Under Alternative 2 impacts to soils would be similar to the proposed action (minor adverse), with slight differences in the Raymond Mountain and Devils Playground-Twin Buttes WSAs. Under this alternative these WSAs would be designated wilderness, thereby offering greater protection to soils.

Water Resources

Under Alternative 2 impacts to water resources would be similar to the proposed action (negligible). The Raymond Mountain WSA has surface and ground water permits affected by wilderness designation. However, every effort would be made to accommodate the water right holders, so only a minor impact would be anticipated.

Vegetation

Under Alternative 2 impacts to vegetation are the same as the proposed action (minor adverse), with slight differences in Raymond Mountain and Devils Playground-Twin Buttes WSAs, where wilderness management restrictions would ease adverse impacts. Timber management in the Ray-

mond Mountain WSA would be eliminated, resulting in no man-caused change for the resource.

Fire Management

Under Alternative 2 impacts to fire management would be similar to the proposed action, with slight differences in those additional WSAs recommended for wilderness designation. In those WSAs recommended for wilderness designation, suppression of naturally occurring fires would usually be precluded. Fire suppression methods would be constrained because motor vehicles would not usually be allowed in the WSAs except in emergency situations.

Livestock Grazing

Under Alternative 2 no impacts would occur to livestock grazing. However, under wilderness management (of six WSAs), some range improvements (vegetation manipulation) would not be allowed, thereby foregoing the beneficial impact these improvements would have caused. There would be some loss of efficiency in livestock management because motor vehicles would be excluded from wilderness Areas.

Wilderness Including Recreation

Wilderness Values

Alternative 2 would add 135,760 acres to the National Wilderness Preservation System (NWPS). This alternative would add 41,620 acres of Wyoming Basin Province—saltbush-greasewood and 94,140 acres of Wyoming Basin Province—sagebrush steppe to the NWPS, and would add to the system's diversity.

The addition of 135,760 acres of wilderness in the wilderness use region would give the region's population more area for wilderness use and is expected to reduce some overuse occurring in designated wilderness areas within the wilderness use region.

Overall impacts to wilderness values under this alternative would be minor adverse, less than the proposed action. The difference from the proposed action would be an increase in protection of wilderness values in three WSAs; Raymond Mountain and Oregon Buttes WSAs would incur minor adverse impacts instead of moderately adverse im-

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pacts, and Devils Playground-Twin Buttes WSA would realize highly beneficial impacts instead of minor adverse impacts.

Recreation Opportunities

Under Alternative 2 impacts to recreation opportunities would be similar to the proposed action (negligible), with the exception of the Sand Dunes WSA. Moderately adverse impacts would occur to recreation opportunities in the Sand Dunes WSA, due to the increased area proposed for wilderness under this alternative. This would increase the area where ORV use would be prohibited.

Visual Resources

Under Alternative 2 adverse impacts to visual resources would be the same as the proposed action (minor adverse), with slight differences in Raymond Mountain and Devils Playground-Twin Buttes WSAs. Raymond Mountain would incur less adverse impacts and Devils Playground-Twin Buttes WSA would experience beneficial impacts, due to wilderness management.

Noise

Under Alternative 2 noise levels would increase, having a minor adverse impact. Wilderness management would decrease the adverse impact slightly in Raymond Mountain and Oregon Buttes WSAs. The Devils Playground-Twin Buttes WSA would experience moderately beneficial impacts due to wilderness management.

Socioeconomic Conditions

Under Alternative 2 no overall impacts to the livestock industry are anticipated, but there would be slightly less opportunities for range improvements. Oil and gas development potential would be slightly reduced, as would the harvesting potential for timber.

Population

Population impacts would be slightly beneficial under this alternative but not as great as the proposed action.

Employment and Income

Implementing fewer range improvements in the WSAs may result in foregone farm proprietors' income over the long term. Slightly more oil and gas industry employment and income may be foregone in relation to the proposed action by designating four additional WSAs as wilderness. Impacts on employment and income from this alternative would be similar to those identified under the proposed action but less beneficial.

Revenues and Taxes

Additional revenues, taxes, and royalties from range improvements and oil and gas developments would be foregone in some cases, above the level identified under the proposed action. Beneficial impacts and opportunities foregone would be similar those identified under the proposed action, but with more opportunities foregone and less beneficial impacts.

Economic Value

Additional benefits would be foregone from fewer range improvements than the proposed action and less oil and gas development than the proposed action. Overall economic impact would be slightly to moderately beneficial.

IMPACTS OF ALTERNATIVE 3 (MINIMIZE WILDERNESS, NO ACTION)

The anticipated impacts of Alternative 3 (non-wilderness management of all 13 WSAs; 218,181 acres—see Table D-2) would be the same as those identified for the proposed action except for the following:

Air Quality

Under Alternative 3 the anticipated impacts to air quality would be similar to the proposed action (minor adverse), with slight differences in the Sand Dunes WSA. The air quality in this WSA would be adversely impacted by expected oil and gas activity, and the impacts would be greater under this alternative.

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Topography

Under Alternative 3 impacts to topography would be similar to the proposed action (minor adverse), with a slight difference in the Honeycomb Buttes WSA. The loss of wilderness protection in this WSA would result in minor adverse impacts to topography.

Paleontological Resources

Under Alternative 3 impacts to paleontological resources would be similar to the proposed action (minor adverse), with a slight difference in the Honeycomb Buttes WSA. The loss of wilderness protection in this WSA would result in minor adverse impacts to paleontological resources.

Soils

Under Alternative 3 impacts to soils would be similar to the proposed action (minor adverse), with a slight difference in the Honeycomb Buttes WSA. Under this alternative the Honeycomb Buttes WSA would not be designated wilderness, and subsequently soils would not be afforded the same protection as under wilderness management. This would result in minor adverse impacts to soils in this WSA.

Vegetation

Under Alternative 3 impacts to vegetation would be similar to the proposed action (minor adverse), with a slight difference in the Honeycomb Buttes WSA. The loss of wilderness protection in this WSA would result in minor adverse impacts to vegetation.

Wildlife

Under Alternative 3 the greatest adverse impacts to wildlife would occur. Nonwilderness management of the Sand Dunes and Honeycomb Buttes WSAs would allow more intense oil and gas development and ORV use. These activities would adversely impact big game, particularly the Sand elk herd.

Continued oil and gas development within and adjacent to those WSAs providing habitat for this elk herd (Buffalo Hump, Sand Dunes, Alkali Draw, South Pinnacles, Honeycomb Buttes, Oregon Buttes, and Whitehorse Creek) would probably

eliminate this unique desert elk herd. This cumulative impact is greater than the sum of its parts. That is, site-specific analyses of the non-wilderness alternative indicated lower adverse impacts to big game because escape areas would still exist outside of the WSA in question. Under this district-wide nonwilderness alternative, the cumulative impact of oil and gas development within and adjacent to the WSAs would probably eliminate the elk herd entirely.

Wilderness Including Recreation

Wilderness Values

Under Alternative 3 no areas would be added to the National Wilderness Preservation System (NWPS). Nonwilderness management of the district WSAs would adversely impact designated wilderness within the wilderness use region by not adding to the present system. Wilderness use of some designated wilderness is already resulting in the overuse of some areas. As population within the wilderness use region is increasing, wilderness use would increase proportionately.

The impacts realized under this alternative would differ from those of the proposed action in two WSAs; Sand Dunes and Honeycomb Buttes. Both would experience a greater loss of wilderness values. The Sand Dunes WSA would experience highly adverse impacts, and Honeycomb Buttes WSA would experience moderately adverse impacts.

Recreation Opportunities

Under Alternative 3 impacts to recreation opportunities would be similar to the proposed action (negligible), with the exception of the Sand Dunes WSA. Moderately adverse impacts would occur to recreation opportunities in the Sand Dunes WSA. Increased oil and gas activity in the Sand Dunes WSA would have an adverse effect on the wildlife, with a subsequent loss of hunter opportunities.

Cultural Resources

Under Alternative 3 impacts to cultural resources would be similar to the proposed action (minor adverse), with the exception of the Sand Dunes and Honeycomb Buttes WSAs. These two WSAs would not be afforded the protection of wilderness management. Honeycomb Buttes WSA

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would not receive the beneficial impact (due to ORV limitations) of wilderness designation, and Sand Dunes WSA would experience highly adverse impacts, as compared to the moderately adverse impacts realized under the proposed action.

Noise

Under Alternative 3 noise levels would increase, having minor to moderately adverse impacts. This is similar to the proposed action, with slight differences in two WSAs. Nonwilderness management would allow a slight increase in noise levels in the Sand Dunes WSA, and the Honeycomb Buttes WSA would not realize the slightly beneficial impacts it would have incurred if it were managed as wilderness.

Socioeconomic Conditions

Socioeconomic impacts resulting from implementation of Alternative 3 would be the same as the proposed action for livestock and timber resources. Socioeconomic impacts from recreation and mineral resources would only differ for the Sand Dunes WSA, where greater opportunities for mineral development would occur and fewer opportunities for recreation would occur.

Population

Population levels may increase above the level projected for the proposed action if employment increased in the oil and gas industry from additional development in the former WSAs. Implementation of this alternative is expected to have minor effects on the total population of the region.

Employment and Income

Recreation use of the WSAs would decrease very slightly below the level expected under the proposed action, due to the decreased recreation use of the Sand Dunes WSA. The impacts on recreational employment and income from decreased recreation use would be slightly greater under this alternative than the proposed action.

This alternative could increase very slightly or extend employment and income in the oil and gas industry above the level projected under the proposed action. Minor changes in employment and income from some increased oil and gas production would be expected to occur.

Revenues and Taxes

Additional revenues, taxes, and royalties would be expected if more oil and gas is developed in the former WSAs. A slight decrease in revenues and taxes would be expected if recreation use of the region decreased. Overall, implementation of this alternative would be expected to have the most beneficial impact on revenues and taxes received in the economic region.

Economic Value

Additional benefits would be received from increased oil and gas production, but benefits from recreation would be expected to be similar to the proposed action.

Summary

Overall impacts to the economy (excluding Economic Value) would be moderately beneficial.

COMPARISON OF IMPACTS

The following discussion and Table D-16 compare and summarize the impacts of the proposed action and alternatives. Designating two WSAs as wilderness (Sand Dunes and Honeycomb Buttes) would result in only minor adverse impacts on the natural resources of the district WSAs. This is the same impact expected under Alternatives 2 and 3, and nearly the same impact expected under the maximize wilderness alternative, Alternative 1. The adverse impacts to natural resources occurring under all alternatives are due to expected oil and gas activities that would occur in these WSAs even under wilderness management, as explained in Chapter 3, Rationale for Impact Analysis. These impacts also reaffirm that oil and gas discoveries will play a more significant role in determining what will happen in the district WSAs, than wilderness designation or nondesignation.

A similar trend is evident regarding impacts to recreation opportunities within the district WSAs; there is little difference among alternatives. Virtually no impacts are expected district wide, with the exception of the minor adverse impacts on recreation opportunities realized under Alternative 1 (maximize wilderness). In most cases this is due to recreation specialists' analyses showing that

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Table O-16
DISTRICT-WIDE COMPARISON OF IMPACTS

Environmental Element	Impact Type ^{1/}	Proposed Action ^{2/}	Alternative 1 (Maximize Wilderness) ^{2/}	Alternative 2 ^{2/}	Alternative 3 (Minimize Wilderness; No Action) ^{2/}
Air Quality	1	Low-	Low-	Low-	Low-
Topography	1	0/Low-	0	0/Low-	0/Low-
Paleontological Resources	1	Low-	Low-	Low-	Low-
Soils	1	Low-	0/Low-	Low-	Low-
Water Resources	1	0	0	0	0
Vegetation and Forest Resources	1	Low-	Low-	Low-	Low-
Fire Management	1	0	0	0	0
Wildlife	1	0/Low-	0/Low-	0/Low-	Mod-
Wild Horses	1	0	0	0	0
Livestock Grazing	4	0/Low+	0	0	0/Low+
Wilderness Values	2	Mod-	0/Low-	Low-	Mod-
Recreation Opportunities	3	0	0/Low-	0	0
Cultural Resources	1	0/Low-	0/Low-	0/Low-	Low-
Visual Resources	1	Low-	0/Low-	0/Low-	Low-
Noise	1	Low/Mod-	Low-	Low-	Low/Mod-
Socioeconomic Conditions					
Recreation Industry	4	0	0/Low-	0	0
Minerals Industry (Oil and Gas)	4	Mod+	Low+	Low/Mod+	Mod+
Timber Industry	4	Low/Mod+	0	0/Low+	Low/Mod+
SUMMATION OF IMPACTS					
Natural Resources		Low-	0/Low-	Low-	Low-
Wilderness Values		Mod-	0/Low-	Low-	Mod-
Recreation Opportunities		0	0/Low-	0	0
Socioeconomic Conditions ^{3/}		Mod+	Low+	Low/Mod+	Mod+

^{1/} For purposes of analysis impacts to environmental elements have been grouped into four types: 1=Natural Resources; 2=Recreation Opportunities; 3=Wilderness Values; and 4=Socioeconomic Conditions.

^{2/} The intensity of impacts is expressed as: Low = minor impact; Mod = moderate impact; High = high impact; 0 = no impact; + = beneficial impact; and - = adverse impact.

^{3/} The impacts reflected for Socioeconomic Conditions are dominated by the oil and gas industry.

Note: Constraints to BLM management produce some impacts that may appear illogical. Refer to the District-wide Analysis, Chapter 3; Rationale for Impact Analysis, for an explanation of these ratings.

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reduced opportunities for motor vehicle-dependent recreation would not be offset by increased nonvehicular recreation, such as backpacking, horseback riding, nonvehicular hunting, etc. An underlying premise of this analysis is that wilderness designation of most WSAs within the district would not bring additional visitors to these areas in the long term, especially when considering expected levels of oil and gas activities. Nearby Forest Service lands represent more traditional wilderness; can be more effectively managed as wilderness without the constraints of valid existing rights; and have additional features such as streams, denser vegetation, and forest cover. These lands would continue to realize increasing public use.

Greater differences between alternatives can be seen with regard to impacts to wilderness values. The range of impacts on wilderness values in various WSAs (as portrayed in the site-specific analyses), ranges from highly beneficial to highly adverse, unlike most of the other values analyzed. This is both an indication of the variations among site-specific impacts and a testimony of the fragile nature of the wilderness resource.

Impacts to wilderness values are more beneficial under the maximize wilderness alternative, but they are still slightly adverse. As explained previously, this is not due to wilderness designation, but rather it is attributable to expected oil and gas development that would occur in many WSAs. The most adverse impacts to wilderness values would logically be expected under the proposed action and Alternative 3, where few if any wilderness areas would be designated. However, in these instances, overall impacts to wilderness values are moderately adverse, but not highly adverse because as oil and gas activities cease (or may never take place), wilderness values and the absence of human activity characteristic of these areas would probably resume. Additionally, not all WSAs or all portions of WSAs would be impacted by oil and gas activity. Other historical uses of the area, such as livestock grazing and wildlife use, would continue, without impacting wilderness values.

An aspect of this wilderness analysis that could be misleading is that these impacts are measured within the long term chronology (20 to 50 years). If a WSA were designated wilderness but oil and gas development occurred within the WSA, there may still be an opportunity, in the very long term (50 to 100 years), for renewal of wilderness values. In this sense wilderness values are a renewable resource and are relative to the dominance of man's work.

Consequently, some areas of the Rocky Mountain West that were once logged or mined have been designated wilderness in recent years.

Overall socioeconomic impacts reflect the converse of impacts to wilderness values. The most beneficial impacts to the economy are provided by the proposed action and Alternative 3. Alternatives 1 and 2, which provide greater protection for wilderness values, do not produce as beneficial an impact to the economy (oil and gas, timber, livestock, and recreation industries). Impacts to the oil and gas industry dominate the economic sector, so overall socioeconomic impacts primarily reflect this segment of the economy. The variable impacts to the timber industry are reflective of differing management proposals for Lake Mountain and Raymond Mountain WSAs, where timber has never been commercially harvested. The livestock industry would be beneficially impacted under the proposed action and Alternative 3, because extensive vegetation manipulation would be allowed in several WSAs, and some opportunities for additional water developments would be afforded. The livestock industry would not be adversely impacted by Alternatives 1 or 2, as expressly provided for by Congress. Valid existing rights ensure that all alternatives would not preclude development opportunities for the oil and gas and livestock industries in most cases. Thus, even Alternatives 1 and 2 would have beneficial impacts to the regional economy.

Unique aspects of the proposed action, such as smaller boundaries for the proposed Sand Dunes wilderness, produce only minute differences in the district-wide impacts expected. However, some site-specific advantages such as increased manageability and limited conflicts with minerals and recreation resources are afforded. ACECs played important roles in moderating impacts. ACECs have been designated as part of the BLM planning system in those cases where BLM management found unique values where specialized management afforded by the Federal Land Policy and Management Act was appropriate. In 7 of the 13 WSAs, approved ACECs would afford protection of key values (usually wildlife, cultural, and recreation) yet still afford carefully controlled development (oil and gas primarily). ACEC management moderated possible extreme differences in impacts expected under various alternatives. However, the greatest impact equalizer was valid existing rights, primarily oil and gas leases. This equalizer put all the WSAs on nearly the same footing: open to long-term onsite development if exploration proved it economical.

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MITIGATION, MONITORING, AND UNAVOIDABLE ADVERSE IMPACTS

An EIS typically has two primary purposes. The first is to identify probable impacts of proposed activities. Second, and equally important, is to identify measures which, if applied, would prevent or lessen the severity of the impacts (mitigation measures).

As BLM employs the EIS process in management and builds an experience base, mitigation measures increasingly become integral parts of on-the-ground activities. Mitigation measures are presently an important part of interim management of the WSAs (see wilderness stipulation, Appendix E). If an area is designated by Congress as wilderness, future experience may dictate that additional mitigation measures are appropriate and in line with BLM authority and the management objectives for that wilderness area. Recognition of the necessity for additional mitigation would be based on monitoring inherent in the BLM Wilderness Management Policy. At that time these measures would be added to those presently derived from the BLM Wilderness Management Policy. At present, appropriate mitigation measures are already included within the activities anticipated to occur under each component of either wilderness or nonwilderness management alternatives. Additional monitoring, beyond that anticipated under wilderness management, has not been identified as a major need.

It is possible that Congress, in designating a wilderness area, could prescribe additional mitigation measures that BLM does not presently have authority to consider. Examples of such mitigation range from purchase of all oil and gas rights and cessation of all activities within a wilderness area (unlikely), to resource-specific prescriptions for appropriate management of a wilderness area. Barring such Congressional action, the adverse impacts described in this chapter are considered unavoidable because the analysis is based on successful application of established mitigation practices.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

Wilderness designation of an individual WSA may be viewed as a short-term use, as it can be terminated by Congress at any time, unlikely as that may be. Upon termination of wilderness status, nonwilderness management (e.g., intensive timber management for harvesting and commercial use, vegetation manipulation for increased forage production, etc.) could be resumed. The ability of the area to produce renewable resources on a sustained yield basis would return to pre-wilderness levels (if in fact, there had been any change), rapidly for some resources (e.g., wildlife) and more slowly for others (e.g., timber). Under wilderness management nonrenewable resources would eventually be "locked up." Should the national need be sufficient to warrant termination of the wilderness status, these nonrenewable resources would still be available for development; they would not be lost. It would also be reasonable to assume that the passage of time would yield more efficient and environmentally acceptable ways to develop these resources.

Conversely, not designating a WSA as wilderness and committing it to other short-term uses may permanently damage its wilderness values and preclude its future "productivity" as wilderness. The short-term uses comprising significant portions of nonwilderness management (e.g., mining, oil and gas development, ORV use, etc.) would result in alterations of the topography, destruction of vegetation, and limiting soil productivity for the duration of the use. When the use was discontinued, all or a portion of the pre-existing capability of the area could feasibly be restored (reclaimed) for continued production of vegetation and other renewable resources. It is, however, unlikely that 100 percent of the disturbances would be completely restored. Some roads would probably remain, so a small net loss in long term "productivity" would most likely be experienced. Nonrenewable resources (e.g., oil and gas) must, of course, be either saved or developed. When saved, they can be subsequently developed, when developed, they cannot be subsequently saved.

DISTRICT-WIDE ANALYSIS

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The adverse impacts of wilderness designation by itself are generally reversible. Loss of areas for ORV use, loss of timber production in a given cycle, loss of mineral revenue for a given year, adverse impacts on employment or income, etc., can all be reversed by Congressional termination of wilderness status for the area. Some aspects of the adverse impacts are irretrievable, although not irreversible. The ORV experiences lost during a period of time cannot be retrieved but with reversal of wilderness designation, the opportunity would be restored.

Conversely, not designating an area as wilderness may not be as reversible because the concurrent commitment of nonrenewable resources to development may have such an adverse impact on the wilderness values. Even in the very long term (50 to 100 years) it is conceivable that some exceptional areas could not be feasibly restored. While the productivity of the soil and vegetation on a hillside where a well site and ac-

cess road were located may be restored successfully and efficiently, restoring the original contour and ecological integrity could be much less feasible. Similarly, a stabilized sand dune may become an active sand dune after disturbance, and reversing this process within 50 to 100 years may not be feasible. These differences may be a matter of degree. Some might argue that even if the sand dune were stabilized in the very long term, the area may have lost its ecological integrity due to the differences between the new ecosite and the old.

SUMMARY

The alternatives presented in this EIS range from total preservation to total production. The BLM preferred alternative is the proposed action. Based on the analysis presented in this EIS, the proposed action is the most equitable. While it does not fully satisfy the desires of any one faction of our society, it presents a workable compromise that would provide considerable socioeconomic benefits, reserve some unique natural values, provide for the dominant vehicle-dependent recreation needs of the region, offer maximum flexibility for livestock operators, and minimize the restrictions on energy development to only a few environmentally sensitive areas.

CHAPTER 4

CONSULTATION AND COORDINATION

TEAM ORGANIZATION

This environmental impact statement was written by an eight person core team with assistance from an interdisciplinary team. The core team was primarily responsible for preparing this document, with technical guidance and input from the special assistance team. Table D-17 lists the preparers of this EIS.

COORDINATION IN PREPARATION OF THE PROPOSED ACTION

The entire wilderness review process has involved extensive public participation since its initiation in late 1978. Public involvement began primarily in February and March of 1979. The proposed initial inventory decisions were announced by the BLM Wyoming State Director on February 7, 1979 and a 90-day public comment period followed. A newspaper supplement describing the initial inventory decisions, *Summary and Facts About BLM's Wilderness Program*, was distributed throughout the state. A series of open houses and public meetings were held in Rock Springs, Kemmerer, and Pinedale to explain the wilderness review process and to solicit public comments. The final decisions on the initial inventory units to be advanced to intensive inventory were issued on July 15, 1979. At the same time, the Secretary of the Interior announced that BLM would conduct an accelerated inventory of those lands in the Overthrust Belt to be completed by December 31, 1979. The intensive inventory of those public lands still under review was conducted during the summer and fall of 1979. In April 1980 BLM published their proposed decisions on the intensive inventory in a newspaper supplement, *BLM's Proposed Wilderness Study Areas, Wilderness Program in Wyoming*, which tentatively identified the inventory units to be further studied as WSAs and those units that were dropped from further consideration. On June 4-5, 1980, public meetings were held in Rock Springs and Pinedale to solicit comments on the wilderness characteristics of each of the proposed WSAs, as well as those areas dropped from further consideration. Comments were accepted through August 19, 1980 and were used in

making the final decisions on the WSAs to be further studied. In November 1980 BLM published their final decisions in a newspaper supplement, *Wyoming Wilderness Study Areas*. A summary of the public comments received on the WSAs was also contained in that supplement. The supplement also announced the opportunity to protest the decisions to the State Director through December 15, 1980. In May 1981 BLM published *Wyoming Wilderness Study Areas, A Final Inventory Report* (BLM 1981h), which identified those WSAs to be examined in the study phase of the wilderness review process. (All of the aforementioned documents are available for review in the Rock Springs District Office.)

Scoping Process

The Council of Environmental Quality (CEQ) regulations implementing the procedural provisions of the National Environmental Policy Act (NEPA) provide for an early and open process to determine the scope of issues to be addressed and to identify the significant issues related to the proposed action. This process is termed scoping.

On September 30, 1981 a public meeting was held in Rock Springs to solicit public input on the preparation of the draft wilderness EIS and identify significant issues. A Notice of Intent to prepare the wilderness EIS was published in the *Federal Register* on August 27, 1981. The notice also announced the time and location of the public scoping meeting. In addition, in September 1981 a letter was mailed to over 300 organizations and individuals, and a news release was sent to local media. Sixteen persons attended the public meeting. Written comments were received from three organization representatives who were unable to attend the meeting.

Key Issues

The scoping process resulted in identification of only one significant concern with the preparation of the wilderness EIS. The proposed action and the alternatives proposed for analysis in the draft EIS were questioned. The view was expressed that the two "moderate" alternatives (proposed action and Alternative 2) were actually "minimize wilderness alternatives" because they would minimize the amount of wilderness available. BLM's response

DISTRICT-WIDE ANALYSIS

Table D-17
LIST OF PREPARERS

Name	EIS Assignment	Position/Expertise	Education	Experience
Donald L. Dutcher	Team Leader	Planning Coordinator/Team Leader	B.A. Liberal Arts, Whitman College, and M.A. Public Administration, University of Oklahoma	3 years BLM; 8 years HUD
David W. Belitsky	Core Team	Salt Wells Area Natural Resource Specialist	B.S. and M.S. Wildlife Management, Ohio State University	4 years BLM
John H. (Jack) Bogle	Core Team	Finedale Area Outdoor Recreation Planner	B.S. Natural Resource Management, Humboldt State University	8 years BLM
Jared Braodwein	Core Team	Big Saody Area Wildlife Management Biologist	A.B. Biology, Ripon College (Wisconsin)	2 1/2 years BLM; 1 1/2 years Forest Service; 2 years Peace Corps
Linda S. Deuell	Core Team	District Writer-Editor		6 1/2 years BLM
Mary J. Haason	Core Team	Salt Wells Area Outdoor Recreation Planner	B.S. Parks and Recreation Management, University of Wyoming	3 years BLM; 2 1/2 years Forest Service
Harold E. Johnson	Core Team	District Outdoor Recreation Planner	B.S. Forestry and M.S. Forest Recreation and Park Management, Southern Illinois University	1 1/2 years BLM; 10 years Fish and Wildlife Service
Russel B. Storbo	Core Team	Kemmerer Area Outdoor Recreation Planner	A.A. Wildlife Management, Columbia Junior College, Columbia, California; B.S. Recreation and Park Administration, California State University	4 years BLM; 2 years National Park Service
Ann B. Aldrich	Special Assistance	District Botanist	B.S. Botany, University of Michigan	2 1/2 years BLM
Renee Dana	Rock Springs District Coordination	District Environmental Coordinator	B.S. Range Management, University of Wyoming	8 years BLM
Dean A. Decker	Special Assistance	District Archeologist	B.A. and M.A. Anthropology, University of California at Los Angeles	2 1/2 years BLM; 1 1/2 years BIA
Ronald C. Herdt	Special Assistance	District Writer-Editor	B.A. Secondary Education, University of Northern Colorado	5 years BLM; 6 years University of Colorado
Laurie Romero	Special Assistance	Biological Aid		1 1/2 years BLM
Dean Stilwell	Special Assistance	Salt Wells Area Geologist	B.S. and M.S. Geology, University of Nebraska	2 years BLM; 1 year private industry; 2 1/2 years University of Nebraska; 1 year Nebraska Geological Survey
Colin W. Voigt	Special Assistance	District Soil Scientist	B.S. Agronomy, University of Kentucky	3 years BLM
Juoe Witt	Word Processing	AMText 425 Operator	B.S. Special Education and Elementary Education, University of Idaho; Office Specialist, Kinman University	1 year BLM; 1 1/2 years CIA; 1 year general
Bonnie Wright	Word Processing	AMText 425 Operator	2 years-Western Wyoming College	2 years BLM
John S. Young	Special Assistance	Regional Economist	B.S. Animal Science and M.S. Agricultural Systems, Colorado State University	2 years BLM; 1 1/2 years CSU
Wayne B. Erickson	Wyoming State Office Wilderness Coordinator	Outdoor Recreation Planner	B.S. Forest Recreation Management, Utah State University	16 years BLM
Edward McTaggart	Wyoming State Office Environmental Coordinator	Environmental Coordinator	B.S. Forest Recreation, Colorado State University	17 1/2 years BLM
Jerry F. Carter	Wyoming State Office Printing	Printing Specialist	3 years-University of Wyoming	6 years BLM; 21 years State of Wyoming
Cindi Dragon	Wyoming State Office Word Processing	AMText 425 Operator	B.S. Consumer Education and Family Services, University of Wyoming	3 1/2 years BLM; 6 years private
Wyoming State Office Technographics Section	Maps and Illustrations	Cartographers and Illustrator		

DISTRICT-WIDE ANALYSIS

emphasized that numbers or acres are not a management consideration in designating wilderness, but that resource values, as measured by the BLM wilderness suitability criteria, and regional/national views on the WSAs are the key considerations.

In response to comments expressed at the public scoping meeting, Alternative 2 was modified slightly, in that the entire Raymond Mountain WSA was proposed for wilderness, instead of just part of the WSA as originally proposed. On November 25, 1981 a followup letter was sent to over 300 organizations and individuals to inform them of the changes made in the proposed action and alternatives in response to public comments.

PUBLIC CONSULTATION AND COORDINATION

In addition to the public consultation afforded by the scoping activities, both formal and informal consultation was conducted with other federal and state agencies. The aspects of possible wilderness designation or nondesignation were discussed with the Forest Service, Fish and Wildlife Service, Minerals Management Service, and other BLM offices. Two coordination meetings were held with state agencies (February 1982 and April 1982) to discuss key issues such as state ownership of lands in wilderness areas, air quality policies, water quality policies, etc. Subsequent to these meetings the State Planning Coordinator's office provided information on some of these issues (Appendix A), as well as the Wyoming Geological Survey's mineral potential rating in the WSAs. Area-wide and county planning organizations were also contacted during preparation of the EIS.

REVIEW OF THE DRAFT

The Draft Rock Springs Wilderness EIS has been mailed to those agencies, organizations, companies, and individuals that have expressed an interest in wilderness in the past. The following list does not include all those receiving the draft, but it is intended as a representation of those interested parties:

Federal Agencies

Bureau of Reclamation
Department of the Air Force
Department of Energy
Environmental Protection Agency
Fish and Wildlife Service
Forest Service
Minerals Management Service
National Park Service
Soil Conservation Service
Superintendent Wind River Indian Reservation
Tennessee Valley Authority
Tribal Council Shoshone and Arapahoe Tribes
U.S. Congressman Dick Cheney
U.S. Senators Alan Simpson and Malcolm Wallop

State Agencies

Governor's Office
Planning Coordinator's Office—State Clearing House (Distributes to State Agencies); also, to:
Wyoming Department of Economic Planning and Development
Wyoming Department of Environmental Quality, Land Quality Division
Wyoming Farm Bureau
Wyoming Game and Fish Department
Wyoming State Land Use Advisory Commission
Wyoming Recreation Commission
Wyoming Travel Commission
Utah Division of Wildlife Resources
State Senators, Fremont, Lincoln, Sublette, Sweetwater, and Uinta counties
State Representatives, Fremont, Lincoln, Sublette, Sweetwater, and Uinta counties

Local Government

Fremont County Commissioners
Fremont County Planner
Mayor of Lander
Lander Planning Board
Lincoln County Commissioners
Lincoln County Planner
Lincoln County Recreation Commission
Lincoln/Uinta Association of Governments
Mayor of Afton
Mayor of Cokeville
Mayor of Diamondville
Mayor of Kemmerer
Mayor of LaBarge

DISTRICT-WIDE ANALYSIS

Mayor of Thayne
Afton Planning Board
Thayne Planning Board
Sublette County Commissioners
Mayor of Big Piney
Mayor of Pinedale
Big Piney Planning Board
Pinedale Chamber of Commerce
Sweetwater County Commissioners
Sweetwater County Association of Governments
Sweetwater County Priorities Board
Mayor of Granger
Mayor of Green River
Mayor of Rock Springs
Mayor of South Superior
Mayor of Wamsutter
Superintendent District 1 Schools
Superintendent District 2 Schools
Green River Planning Board
Green River Chamber of Commerce
Rock Springs Chamber of Commerce
Rock Springs Planning Board
Uinta County Commissioners
Mayor of Evanston
Mayor of Lyman
Mayor of Mountain View
Evanston Planning Board
Lyman Planning Board

Educational Organizations

Center for Urban Affairs and Policy Research
Institute for Policy Research
University of Wyoming
Water Resource Research Institute
Western Wyoming College

Private Interests

Allied Chemical Corp.
Amoco Production Co.
Arco Coal Co.
Beard Oil Co.
Belco Petroleum Corp.
Black Butte Coal Co.
Bronco Exploration
Champlin Petroleum Co.
Chevron U.S.A., Inc.
Church and Dwight Co., Inc.
Cities Service Co.
Coastal Oil and Gas Corp.
Consolidation Coal Co.
Cumberland Coal Co.
Davis Oil Co.
DEDCO, Inc.

Energy Reserves Group Exxon Co.
FMC, Inc.
Gulf Oil Corp.
Inter North, Inc.
Kerr-McGee Coal Corp.
KOCH Exploration Co.
Marathon Oil Co.
Mesa Petroleum Co.
Mobil Oil Corp.
Mountain Bell Telephone Co.
Mountain Fuel Supply Co.
Natural Gas Corp. of California
Northern Minerals Co.
Pace Co.
Pacific Power and Light Co.
Peabody Coal Co.
Pennzoil Exploration and Production Co.
Peter Kiewit Sons and Co.
Petroleum, Inc.
Phillips Petroleum Co.
Prenalta Corp.
Regulus Corp.
Rocky Mountain Energy
Shell Oil Co.
Sovereign Oil Co.
Standard Oil (Indiana)
Stauffer Chemical Co.
Tenneco Oil Co.
Teton Exploration Drilling Co., Inc.
Texaco, Inc.
Texas Gulf, Inc.
Texas Oil and Gas Corp.
Union Oil Co. of California
U.S. Steel Corp.
Utah International, Inc.
Utah Power and Light Co.
Vulcan Materials Co.
Wexpro Co.

Other Interested Organizations and Individuals

American Wilderness Alliance
Capitola Fox Livestock
Castle Rock Gem and Mineral Club
Citizens for the Survival of the Red Desert
Defenders of Wildlife
ENACTICS
Environmental Defense Fund
Friends of the Earth
Green River Valley Cattlemen's Association
Izaak Walton League
Finis Mitchell
National Audubon Society
National Wildlife Federation

DISTRICT-WIDE ANALYSIS

Natural Resource Defense Council
Old West Regional Commission
Petroleum Association of Wyoming
Powell Recreation District
Calvin Ragsdale
Rock Springs Gem and Mineral Club
Rocky Mountain Mineralogical Society
Sierra Club Legal Defense Fund
Southwest Wyoming Industrial Association
Sweetwater County Wildlife Association
Sweetwater Farm Bureau
Upper Green River Chapter of Trout Unlimited
Hugh Wardell
Wilderness Society
Wild Horse Organized Assistance
Wildlife Management Institute
Wyoming Farm Bureau Federation
Wyoming Mining Association
Wyoming Natural Heritage Program
Wyoming Outdoor Council

Wyoming Outfitters Association
Wyoming Public Lands Council
Wyoming State Archives
Wyoming State Gem and Mineral Society
Wyoming State Snowmobile Association
Wyoming Timber Industry
Wyoming Wilderness Association
Wyoming Wildlife Federation
Wyoming Wool Growers Association
Yose Cattle Company
YWCA of Sweetwater County

Copies of the draft were also made available for public review at public libraries in Big Piney, Cheyenne, Evanston, Green River, Jackson, Kemmerer, Pinedale, Rock Springs, and Superior, Wyoming. Copies were also made available at the University of Wyoming Library at Laramie and the Colorado State University Library at Fort Collins. A limited number of draft EISs are available upon request from the Rock Springs District Office.

DISTRICT OF COLUMBIA

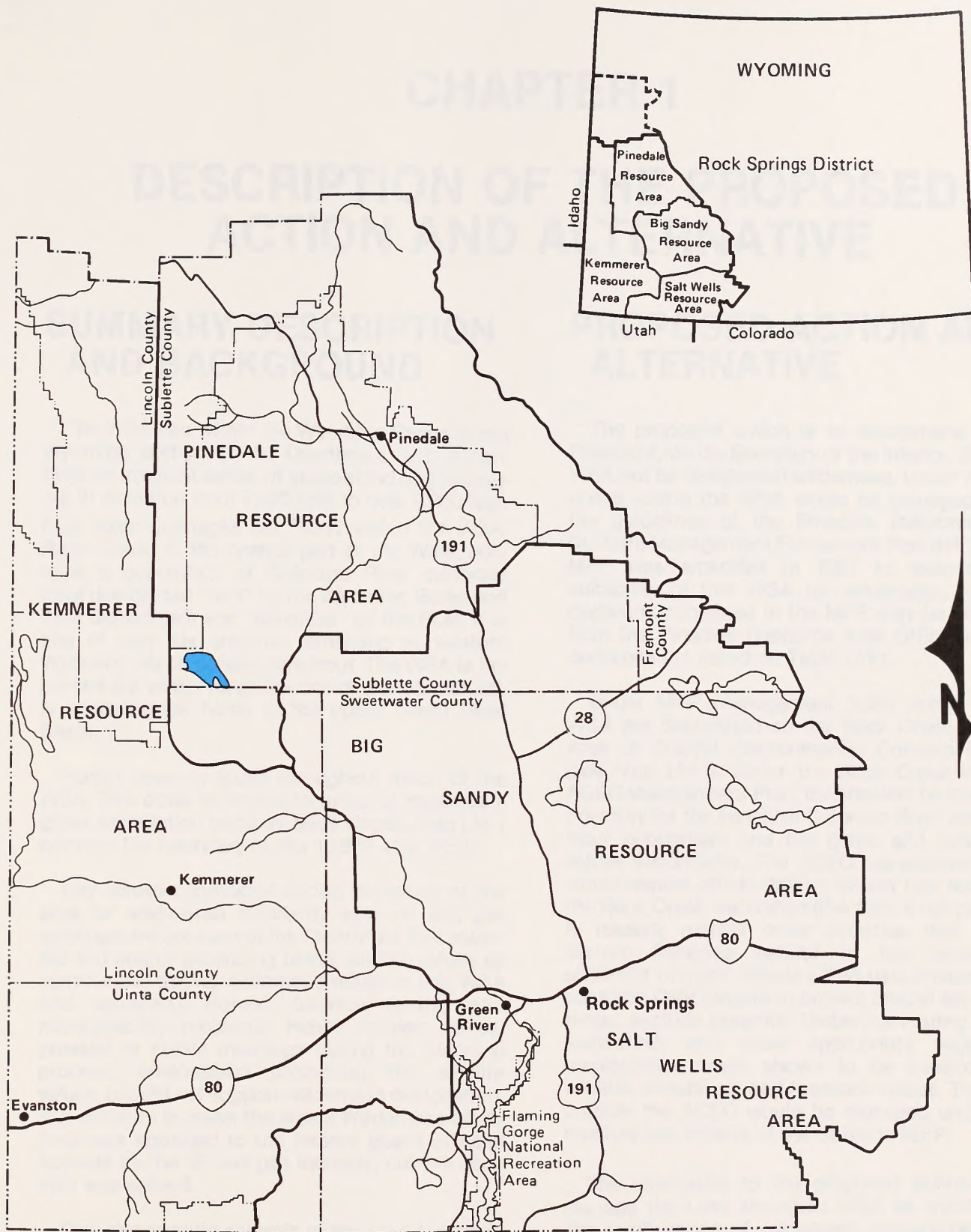
Washington, D.C. is the capital of the United States and is located in the District of Columbia. The city is situated on the banks of the Potomac River, which flows into the Chesapeake Bay. The District of Columbia is a federal district and is not part of any state. It is the only federal district in the United States. The city of Washington is the largest city in the District of Columbia and is the seat of the federal government. The city is known for its many government buildings, including the White House, the U.S. Capitol, and the Supreme Court. The city is also known for its many museums, including the Smithsonian Institution, the National Museum of Natural History, and the National Air and Space Museum. The city is a major center of government, commerce, and culture in the United States.

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CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

The WSA lies within the Wyoming Range in the Wyoming portion of the Overthrust Belt. It contains an irregular series of steep-sided ridges ranging in elevation from 7,400 feet to over 9,600 feet. Four main drainages are found within the WSA. Rock Creek, in the central part of the WSA, contains a population of Colorado River cutthroat trout designated "rare" by the Wyoming Game and Fish Department and "sensitive" by the BLM. It is one of only six streams remaining in western Wyoming which contain rare trout. The WSA is important elk winter range for one of the last naturally wintering elk herds in the upper Green River Basin.

Forest cover is found throughout much of the WSA. This cover is broken by areas of sagebrush-grass association and bare talus slopes. Map LM-1 portrays the boundary of the 13,970 acre WSA.

Key issues considered during the study of the area for wilderness suitability were oil and gas development because of the Overthrust Belt potential and nearby producing fields; wildlife values as summarized above; wilderness values in this WSA and adjacent Forest Service lands; and manageability problems. Public opinion, as expressed at public meetings during the planning process, emphasized protecting the wildlife values, but did not support wilderness designation. The decision to make the area a Wilderness Study Area was appealed to the Interior Board of Land Appeals by the oil and gas industry, but the decision was upheld.

This site-specific analysis of the Lake Mountain WSA analyzes the impacts of wilderness and non-wilderness management. In all alternatives considered in the District-wide Analysis; the Lake Mountain WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternatives 2 and 3, the WSA would be under nonwilderness management; under Alternative 1, the WSA would be managed as wilderness.

PROPOSED ACTION AND ALTERNATIVE

The proposed action is to recommend to the President, via the Secretary of the Interior, that this WSA not be designated wilderness. Under the proposed action the WSA would be managed under the guidelines of the Pinedale Resource Area Sublette Management Framework Plan (MFP). This MFP was amended in 1981 to examine the suitability of this WSA for wilderness. Specific decisions contained in the MFP may be obtained from the Pinedale Resource Area Office and key decisions are listed on Table LM-1.

Under MFP management 5,264 acres in the WSA are designated as the Rock Creek Wildlife Area of Critical Environmental Concern (ACEC) (see Map LM-1). Under the Rock Creek Wildlife ACEC Management Plan, the area will be managed primarily for the sensitive Colorado River cutthroat trout population; and big game and recreation values secondarily. The ACEC management plan would require offsite drilling for any new leases in the Rock Creek watershed (the area is not presently leased); restrict other activities that would disturb fisheries habitat in the watershed; eliminate off-road vehicle (ORV) use; implement a seasonal ORV closure to protect crucial elk winter range; exclude potential timber harvesting in the watershed; and allow appropriate vegetation manipulation when shown to be beneficial to wildlife, watershed, and livestock values. The area outside the ACEC would be managed under the multiple-use criteria of the Sublette MFP.

The alternative to the proposed action is to manage the Lake Mountain WSA as wilderness. The implications of wilderness management are summarized in Table D-1 of the District-wide Analysis. Wilderness management would provide only slightly more protection to wilderness values and other natural resources of the WSA. Several constraints to wilderness management of this WSA would make the activities allowed under wilderness or nonwilderness alternatives, as well as the impacts, very similar. The area outside the

LAKE MOUNTAIN

Table LM-1

MFF DECISIONS AFFECTING LAKE MOUNTAIN WSA

Resource Area and MFF Decision	MFF Multiple-Use Recommendation	Discussion
Pinedale WL-1.1	<p>Designate the entire Rock Creek watershed as Area of Critical Environmental Concern (ACEC) in order to protect Colorado River cutthroat trout habitat, with emphasis placed on maintenance and improvement of aquatic habitat. Special management conditions of the ACEC necessary to accomplish the desired objective are:</p> <ol style="list-style-type: none"> 1. The 5,264 acres available for oil and gas leasing within the Rock Creek drainage should be leased <u>only</u> with a no occupancy stipulation. 2. Designate a yearlong ORV closure for the Rock Creek watershed. 3. Restrict other activities to the extent necessary to ensure that they do not significantly impact the aquatic resource. 	<p>Rock Creek contains a population of Colorado River cutthroat trout which has been determined to contain the best representatives of "wholly pure" strain individuals of this species. This fish has been designated rare by the Wyoming Game and Fish Department and sensitive by the Wyoming BLM. Any significant disturbance from oil and gas development in the drainage could threaten the future existence of this species by habitat degradation or accidental spills.</p>
Pinedale WL-2.1	<p>Institute a seasonal motorized vehicle closure of crucial elk winter range during those years when such action is warranted by severe climatic conditions. Normal periods of closure would be from December 1 to May 15. Yearly coordination meetings with the Wyoming Game and Fish Department will be held to determine if conditions warrant closure. Needed access into the closed area can be granted by the Area Manager when necessary.</p>	<p>The Lake Mountain, Deadline Ridge, and Miller Mountain elk herds are the last remaining natural wintering elk populations in the Upper Green River Basin. Snowmachine use on these winter ranges has in the past moved elk to the lower valley bottoms, resulting in depredation problems and increased stress on wintering animals. It is felt that a seasonal vehicle closure of these areas during severe winters would greatly lessen depredation problems and help to maintain these elk herds in a natural state.</p>
Pinedale WL-2.2	<p>Ensure that existing oil and gas lease stipulations regarding timing of drilling and other development and exploration activity within elk winter range are adhered to. Any future leases within elk winter range should contain stipulations limiting construction, drilling and exploration activity during the crucial winter period (Dec. 1-May 15).</p>	<p>Any significant increase in activity during the winter months could result in displacement of elk from their natural winter ranges to private haylands in the drainage bottoms. This results in depredation problems and increased stress on wintering animals. The problem is compounded if activity is occurring in several locations at one time. The stipulations provide flexibility to coordinate drilling activity with elk requirements.</p>
Pinedale M-1.1	<p>Allow no surface occupancy leasing within the Rock Creek Drainage (see WL-1.1).</p> <p>Offer the remainder of the Lake Mountain WSA for oil and gas leasing with stipulations that will protect the crucial elk winter range.</p>	<p>Any disturbance that would alter the water quality within Rock Creek may eliminate the purest strain of Colorado River cutthroat known to exist.</p> <p>The side slopes within the Rock Creek drainage are very steep and in many cases they exceed 40%. Because of this situation any oil and gas drilling would create a high risk for contaminant spillage and create erosion problems.</p>
Pinedale M-1.2	<p>Allow for leasing, exploration and drilling activity in areas outside the Rock Creek drainage ACEC.</p>	<p>There is a national need for these resources and with current surface management regulations, environmental impacts can be minimized.</p>
Pinedale F-1.1 F-1.2 F-1.3	<p>Implement timber and Christmas tree cutting in the Lake Mountain area on a sustained yield basis except:</p> <ol style="list-style-type: none"> 1. Exclude all timber harvesting activities, regardless of stand condition, from the Rock Creek drainage. 2. Not allow any harvesting activities to occur during the winter ORV closure. 3. Require cable or horse skidding on all slopes over 40% and areas with fragile or highly erodible soils. 	<p>Rock Creek supports Colorado River cutthroat trout. This species of trout is dependent on waters with minimal siltation loads. The watershed surrounding Rock Creek has been identified as static but fragile, meaning that any surface disturbance, such as logging, could result in erosion and accelerated stream siltation.</p> <p>The Lake Mountain, Deadline Ridge, Miller Mountain area supports one of the few natural wintering elk herds in Sublette County. The no logging-ORV winter closure is necessary to prevent the animals from being forced off this natural range and into a feed-ground situation or onto private lands along LaBarge Creek.</p> <p>Horse, as well as cable systems, cause less soil disturbance and compaction and reduce the number of roads required.</p>

LAKE MOUNTAIN

Table LM-1
(Continued)

Resource Area and MFP Decision	MFP Multiple-Use Recommendation	Discussion
Pinedale RM-1.1	Spray the Fox-Yose and Upper North LaBarge allotments with the objective of reducing the density of sagebrush to 20% of the vegetative composition where spraying would be cost beneficial to wildlife, watershed, and livestock values.	A decrease in density of sagebrush would have the effect of increasing available livestock forage. The spraying would increase the amounts of grass and litter. The sprayings would increase forage production by an additional 500 AUMs, of which 400 AUMs would be in the Upper North LaBarge Allotment and 100 AUMs in the Fox-Yose Allotment. Certain areas are identified as crucial elk winter range and spraying these areas would increase the amount of forage available. The Lake Mountain-Deadline Ridge area is one of the few areas which still serves as a natural winter range for elk.
Pinedale RM-1.2	Maintain the range improvements in the WSA in order to maintain their effectiveness for range management.	The range improvements in the WSA are mainly water developments. In order to maintain proper livestock distribution, water must be available in the area. The lack of naturally occurring water from springs or streams on the higher ridges make it very necessary to maintain the structures that have been developed.
Pinedale R-1.2	Recommend the 9,770 acres outside of the Rock Creek drainage as an ORV limited area restricting vehicle use to existing roads and jeep trails, with the exception of snowmobiles and other snow machines. There will be no ORV use during the period when the elk winter range closure is in effect except on designated roads.	The increase in ORV use in the area is beginning to create problems due to the steep slopes and erodible soils in the area. There are currently enough roads and jeep trails in the area to provide adequate access for hunting and other recreation activities. Limiting use to existing roads will protect the base resources while still offering access to a high quality hunting area.
Pinedale R-2.1	Establish public access on the road through private land in the LaBarge Creek-Long Hollow area, sections 22, 26, and 27, T. 27 N., R. 115 W.	The LaBarge Creek-Long Hollow road is currently being used as public access and is essential for access to the Lake Mountain WSA as well as the Bridger-Teton National Forest and other public lands.

Note: A MFP decision was not developed which recommended consideration of Lake Mountain WSA for wilderness designation. Consideration of the entire WSA or a portion of the WSA for wilderness was not considered to be an appropriate MFP recommendation by the resource area staff because of the wilderness suitability criteria and the following rationale summarized at the end of the MFP: The wilderness values for the lands outside the Rock Creek drainage have been reduced by man's activities and are not of sufficient quality or manageability to warrant wilderness recommendations. The Rock Creek drainage, which is the only area identified as having high quality wilderness values, is a relatively small area, and does not offer diversity to the wilderness system in the region. Its small size greatly reduces the wilderness manageability of the area.

LAKE MOUNTAIN

Interrelationship With Forest Service Planning

The adjacent Bridger-Teton National Forest lands were considered for wilderness designation in the RARE II studies of 1977. Much of this area has similar wilderness and supplemental values as the Lake Mountain WSA. None of the adjacent National Forest lands were recommended for wilderness designation by the Forest Service and are presently managed for multiple use.

LAKE MONTANA

The first of the great lakes of the West, Lake Montana is a vast expanse of water, stretching for miles in every direction. It is a place of great beauty and interest, and one that is well worth a visit. The lake is surrounded by a range of mountains, and the water is a deep, clear blue. The sky is a pale, hazy blue, and the air is fresh and cool. The sun is shining brightly, and the water is sparkling. The mountains are covered in a thick forest of evergreen trees, and the air is filled with the sound of birds singing. The lake is a place of peace and tranquility, and one that is well worth a visit.

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CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Lake Mountain WSA is characteristic of a mountainous region. Temperatures above 90° F. rarely occur during the summer, but below 0° F. temperatures are frequent during the winter. The average length of the growing season is approximately 100 days, but below freezing temperatures (32° F.) can occur at any time during the year.

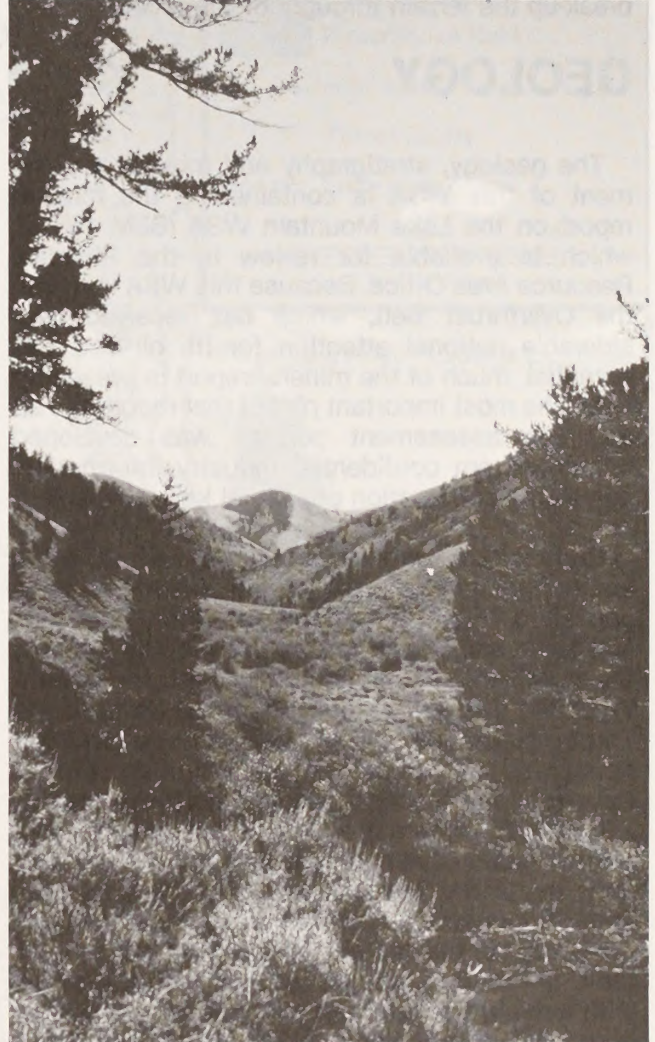
The area receives approximately 12 inches of annual precipitation. Late spring storms, early summer thunderstorms, and winter snowstorms account for most of the annual precipitation. The average annual snowfall in the area is above 100 inches.

The predominant wind directions are from the west, west-southwest, and southwest. The average annual wind speed is slightly more than 10 mph, with higher speeds during the winter months than during the summer months.

AIR QUALITY

Based on the total suspended particulate (TSP) measurements from the high-volume sampler located in Boulder, the air quality in the area is very good. The 1975–1978 average annual geometric mean of 8 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) compares favorably to the Wyoming Ambient Air Quality Standard of 60 $\mu\text{g}/\text{m}^3$ (see Table D-5 in the District-wide Analysis). No measurements of the other criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) have been made near the area, but these are assumed to be fairly low, based on the nature of the existing sources.

The only existing major pollutant source near the area is the development in the LaBarge oil and gas fields located five miles east of the WSA. There is, however, a new oil and gas field being developed adjacent to the WSA in the Deadline Ridge-Riley Ridge area. This field will be predominantly “sour gas,” which is natural gas that is high in hydrogen sulfide.



Looking north up the Rock Creek drainage.

TOPOGRAPHY

Lake Mountain WSA lies within the foothills of the Wyoming Mountain Range. It is typified by an irregular series of steep-sided ridges ranging in elevation from 7,400 feet to over 9,600 feet. Four main drainages are found within the WSA. In the western and central portions are Long Hollow and Rock Creek, respectively. Both of these contain steep slopes of talus material and forest cover. The southeast portion contains the other two drainages: Pine and Graphite hollows. These drainages exhibit the steepness of the other

LAKE MOUNTAIN

drainages, but are found in a drier area and therefore lack extensive vegetation cover. Numerous smaller drainages serve to further break-up the terrain throughout the WSA.

GEOLOGY

The geology, stratigraphy and mineral assessment of this WSA is contained in the mineral report on the Lake Mountain WSA (BLM 1981d), which is available for review in the Pinedale Resource Area Office. Because this WSA is within the Overthrust Belt, which has received considerable national attention for its oil and gas potential, much of the mineral report is presented here. The most important part of that report, the oil and gas assessment portion, was developed primarily from confidential industry information, due to the cooperation of several key companies.

Surface rock units in the Lake Mountain region are sedimentary in origin. These sediments were deposited during portions of the Paleozoic, Mesozoic, and Cenozoic eras. The WSA is a part of the cordilleran fold and thrust belt. In western Wyoming this belt extends from the Uinta to the Teton mountains. This belt of deformation developed in geosynclinal thicknesses of Paleozoic and Mesozoic sediments (Ross and St. John 1960). Three major, low angle, west-dipping, reverse faults have been described in the LaBarge area; the Darby, the Prospect, and the Absaroka. The WSA's eastern boundary is approximately six miles west of the eastern edge of the Darby Thrust fault. The fault is thought to be of Paleocene age, with a minimum length of 100 miles, a postulated horizontal displacement of 15 miles (Mansfield 1927), and stratigraphic throw of over 20,000 feet (Ross and St. John 1960). The major faults are considered to bottom-out on a decollement in the Cambrian strata lying above the west-dipping surface of the Precambrian basement.

The Moxa Arch of the western Green River Basin merges to the north into the broad anticline of the LaBarge platform (Blackstone 1979). The platform passes beneath the thrusts in the LaBarge area and is older than the thrusting.

Surface geologic structures in the Lake Mountain WSA are two thrust faults which outcrop at the surface. They trend north-south and dip west. The western most fault is called the Meridian Thrust. The WSA is part of a doubly plunging syncline that trends north 70° west, and dips in the

eastern limb are up to 45° while the western limb is broken up by normal faulting.

Major thrust faults and oil and gas fields (1981) are shown on Map LM-2. This map also indicates the location of the two district overthrust WSAs: Lake Mountain and Raymond Mountain. The other WSAs shown on the map are in Idaho and are administered by the BLM Idaho Falls District Office.

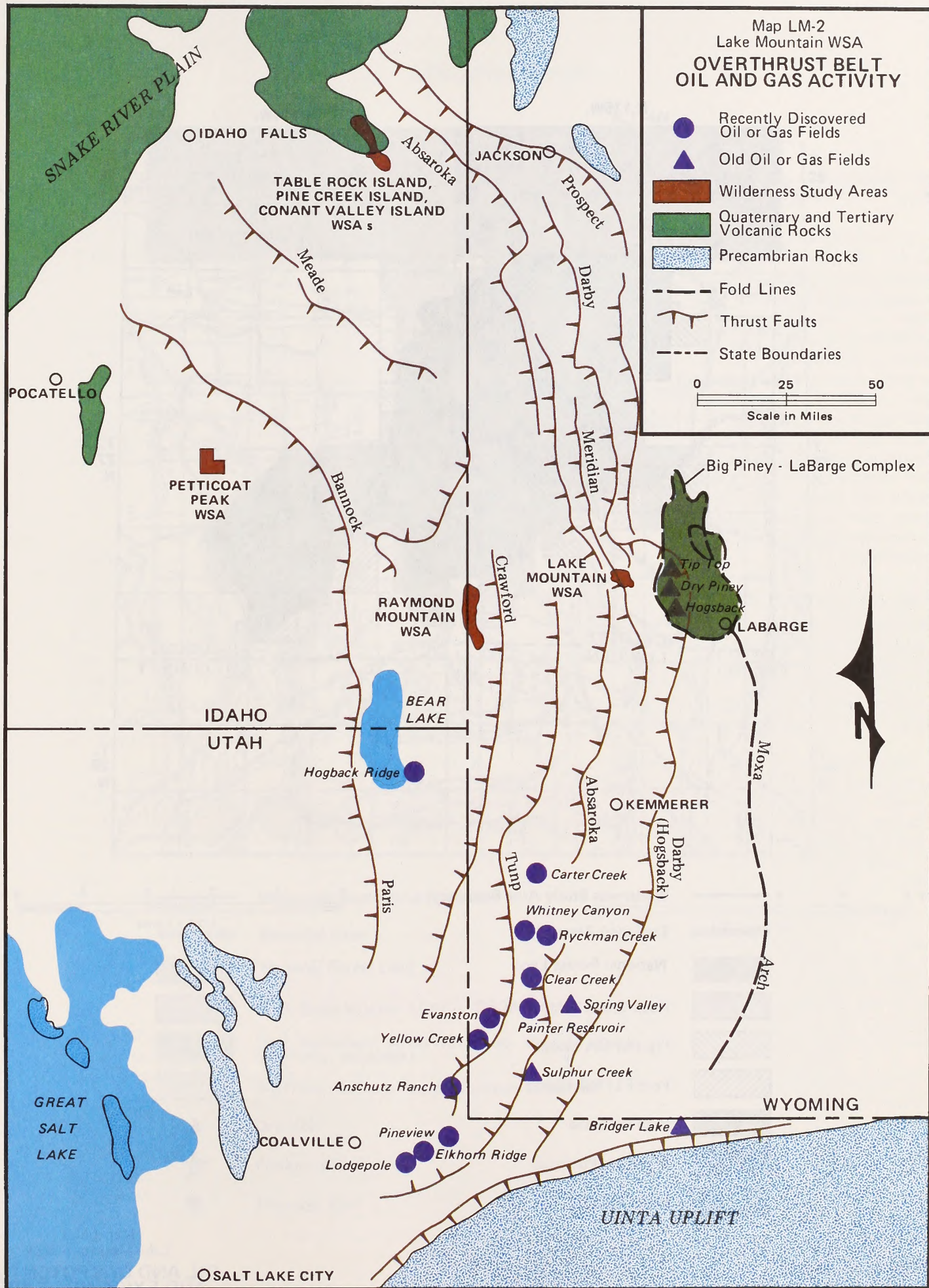
Mineral Resources

Hydrocarbons are the most valuable potential mineral resources of the Lake Mountain WSA. Producing oil and gas fields occur immediately east and north of the WSA. The four producing fields (Dry Piney, Hogsback, Tip Top, and Pine Grove) adjacent to the WSA are shown on Map LM-2. In the BLM mineral report for Lake Mountain WSA, a moderate potential rating (33 to 66 percent chance of oil and gas development) was assigned to that part of the WSA lying east of Rock Creek, but not in the geologic structure (see Map LM-3); a high potential (greater than 66 percent) was assigned to that portion within the known geologic structure; and a low development potential was assigned to that area west of Rock Creek. Much of the WSA is already leased, with the exception of the Rock Creek area. Pre- and post-FLPMA leasing patterns are shown on Map LM-3. Approximately 50 percent of the WSA is covered by pre-FLPMA leases.

Present oil and gas activity in the WSA is shown on Map LM-4. Exxon has a shut-in well (Exxon Graphite No. 1) within a half mile of the WSA boundary and has proposed drilling another well within the WSA in section 22, T. 27 N., R. 114 W. Three other wells have been drilled either within the WSA or on the WSA boundaries, but they have been dry holes.

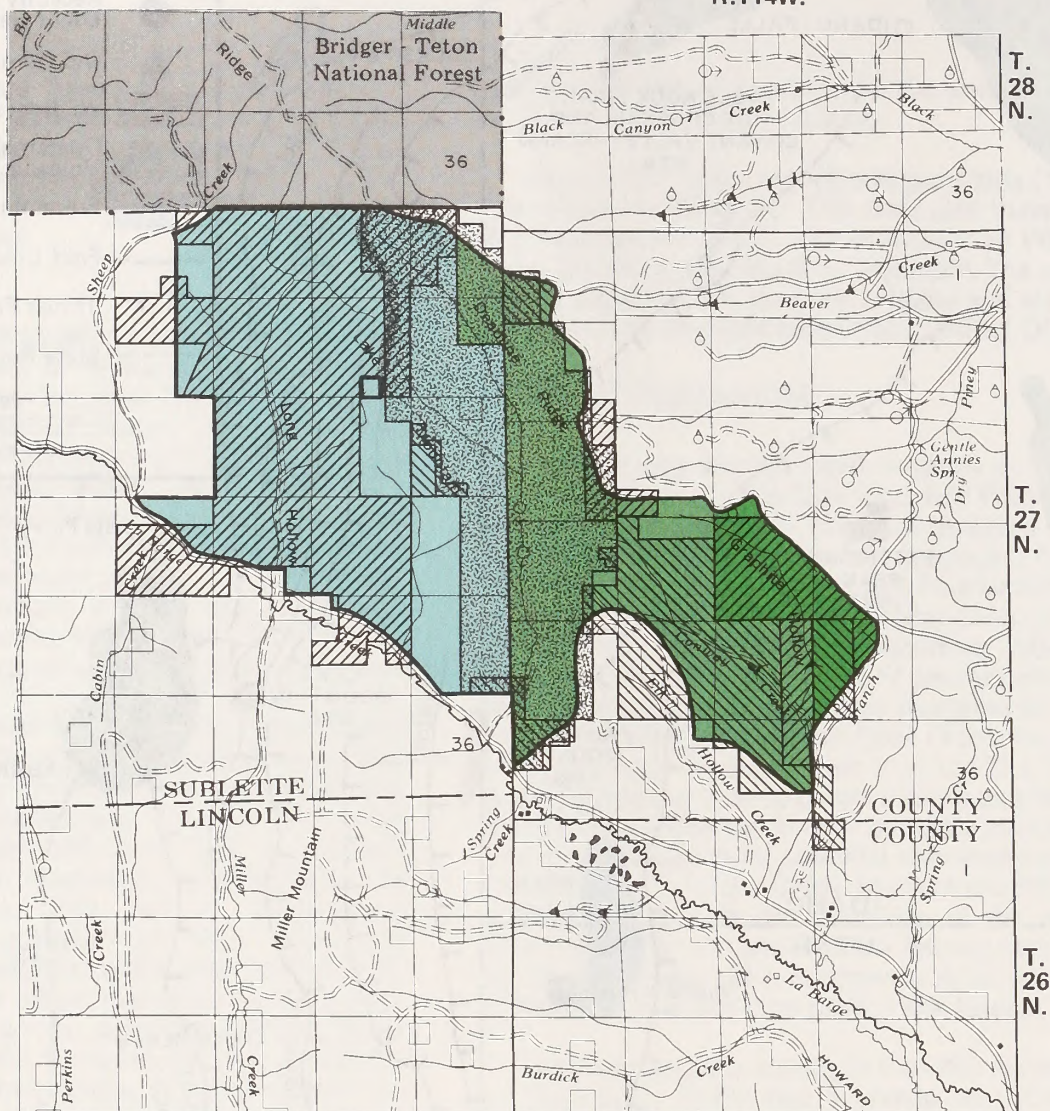
BLM has estimated for analysis purposes that 28 billion cubic feet (Bcf) of shallow gas and 50 Bcf of deep gas occur in the moderate potential area; and 32 Bcf of deep gas occurs in the high potential area. New information from adjacent wells indicates a higher likelihood of deep gas and a lower likelihood of shallow gas.

Small amounts of Tertiary rock lie along the southeast side of the WSA. Some of these rocks may be coal bearing, but the total tonnage would be very small (Teknekron 1980). No other formations present at the surface are coal bearing. Sub-surface coal bearing rocks may occur at a depth of 3,000 to 4,000 feet. Coal is considered to have a

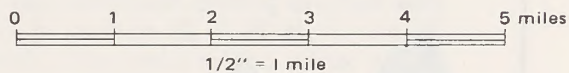


R.115W.

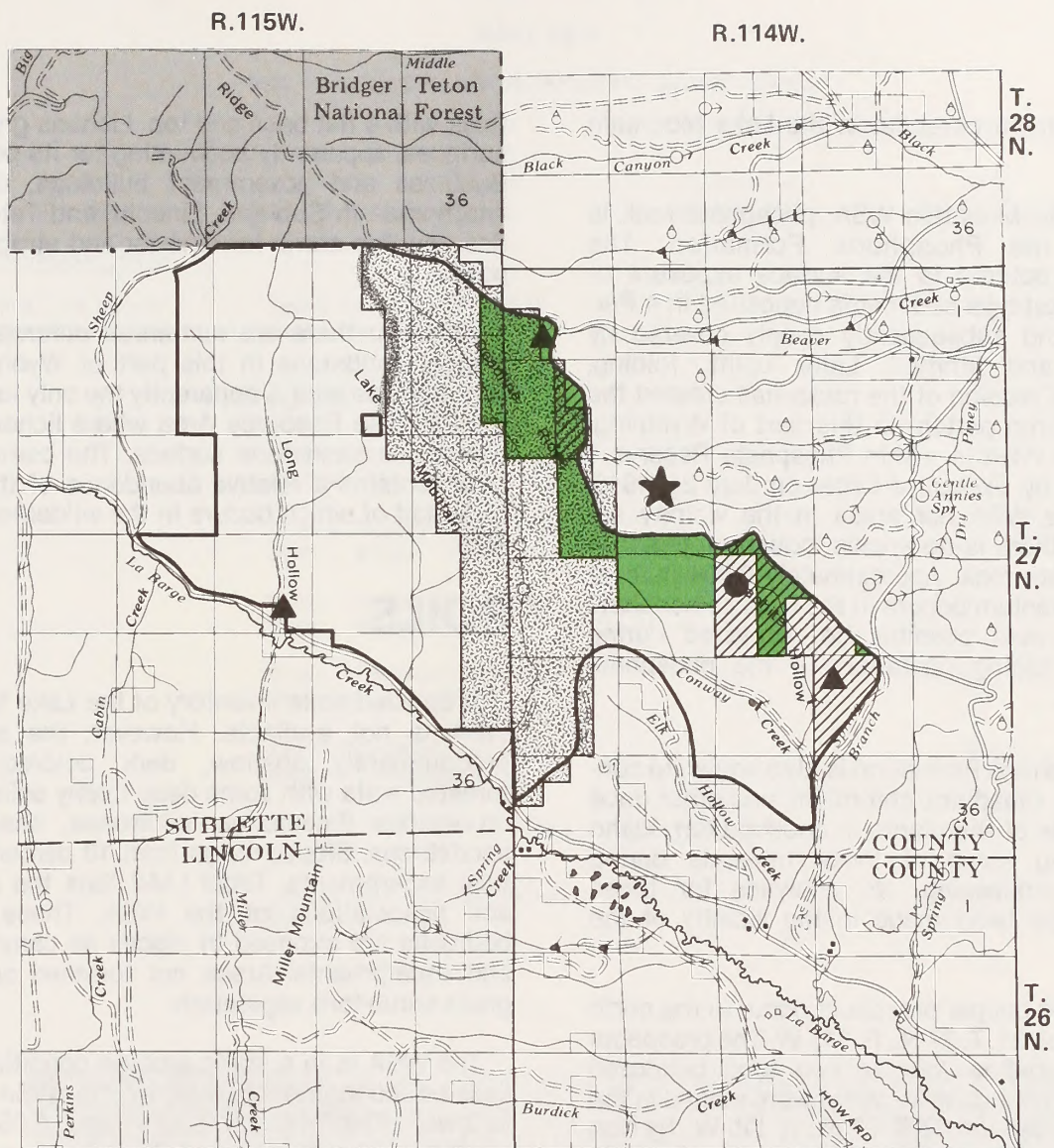
R.114W.



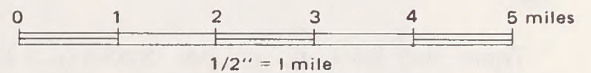
- Wilderness Study Area Boundary
- Excluded Area
- National Forest Land
- Rock Creek Wildlife ACEC
- Pre-FLPMA Leases
- Post-FLPMA Leases
- High Potential
- Moderate Potential
- Low Potential



Map LM-3
Lake Mountain WSA
**OIL AND GAS POTENTIAL
AND EXISTING LEASES**



- Wilderness Study Area Boundary
- Excluded Area
- National Forest Land
- Rock Creek Wildlife ACEC
- Unit Agreement Areas (Graphite, Fogarty Creek, Dry Piney, Hogsback)
- Big Piney - LaBarge Known Geologic Structure
- Dry Hole
- Producing Well
- Proposed Well



LAKE MOUNTAIN

low development potential in the Lake Mountain WSA.

In the Lake Mountain WSA, phosphate rock is found in the Phosphoria Formation. The Phosphoria outcrop is the surface exposure of former blanket-type sediments deposited in a Permian sea and subsequently deeply covered by sediments and lithified. Later uplift, folding, faulting, and erosion of the rocks has created the present outcrop pattern in this part of Wyoming. Most of the WSA is within Phosphate Reserve 4 established by Executive Order on July 21, 1910. None of the WSA nor areas in the vicinity are leased and there is no known industry interest in the phosphate rock. Approximately 0.004 percent elemental uranium occurs in the Upper Phosphate Zone and could possibly be recovered during phosphate mining operations if the phosphate were mined.

The Phosphoria Formation is also known to contain fluorine, vanadium, chromium, and other trace metals. Some of the plants in southeastern Idaho are removing some of these minerals during phosphate processing. No analyses for these minerals have been made in the vicinity of the WSA.

Abandoned copper prospects occur in the north half of section 21, T. 27 N., R. 115 W. The prospects consist of shallow (one to two foot) bulldozed trenches. In 1941 copper claims were staked in the north half of section 22, T. 27 N., R. 115 W., by Ivan M. Lewis, et al. These claims were relinquished in 1963.

There has been no copper production in the area, nor are there any published accounts of known copper occurrences. Copper staining in the Nugget Sandstone appears to commonly occur within the Wyoming Thrust belt (Love 1973). No exploration work for copper is known to be taking place in the vicinity of the WSA.

A portion of the Lake Mountain WSA has been designated as a Common Use Area for the removal of moss rock, a lichen-covered sandstone, used as a building material. The Pinedale Resource Area has designated federal land in sections 15, 22, 27, and 34 of T. 27 N., R. 115 W. as removal areas. The sandstone's fracture, color, and hardness make it an excellent dimension stone, useful for decorative and building purposes. It is pink salmon laminated sandstone which tends to break along bedding planes, leaving blocks two to four inches

thick with a flat base and top. Lichens grow on its surfaces, apparently accounting for its popularity. Business and government buildings, churches, and homes in Sublette, Lincoln, and Teton counties use this stone for exterior and structure purposes.

Although there are numerous outcrops of the Nugget sandstone in this part of Wyoming, the common use area is apparently the only location in the Pinedale Resource Area where lichen growth covers the sandstone surface. The common use area contains a relative abundance of this moss rock, half of which occurs in the wilderness study area.

SOILS

A detailed soils inventory of the Lake Mountain WSA is not available. However, the soils are predominantly shallow, dark colored, stony, forested soils with some deep loamy soils formed on various limestones, siltstones, shales, and sandstones. Slopes range from 10 percent to vertical escarpments. Table LM-2 lists the probable soil associations of the WSA. These various bedrocks are exposed in places as canyon walls and escarpments. Areas not forested support a grass-shrub-forb vegetation.

The WSA is in a static erosion condition trend. Erosion condition classes in the WSA are as follows: 10,912 acres slight and 3,058 acres moderate. The area east of Rock Creek and south of Deadline Ridge is in the moderate class, however, this area has an erosion susceptibility which could cause it to be classified as critical in the future. Approximately 600 acres which are currently classified as slight could change to moderate classification if current management practices are continued.

If present levels of use by livestock, wildlife, and recreationists are continued, an increase in erosion would occur. The main problem is livestock. If the present level of livestock use is continued in portions of the WSA, it is projected that the erosion class will deteriorate from a moderate class to the critical class, and a portion of the slight class will deteriorate to the moderate class. The steep terrain along the drainages encourages the concentration of livestock along the drainage bottoms of Rock Creek and Long Hollow.

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Table LM-2

SOIL ASSOCIATION AND PRODUCTIVITY CLASSIFICATION

<u>Mapping Unit Name</u>	<u>Subgroup, Family</u>	<u>Percent of Mapping Unit</u>	<u>Soil Productivity</u>
<u>Mountain Soils</u>			
Shallow Stony Forested Soils	Typic Cryoboralfs, fine, loamy, mixed	15	High
	Typic Cryoboralfs, loamy skeletal, mixed	15	Low
	Typic Cryoboralfs, fine, montmorillonitic	10	High
	Lithic Cryoboralfs, fine loamy, mixed	5	Very Low
	Typic Cryoborolls, fine loamy, mixed	15	Low
	Typic Cryoborolls, loamy skeletal, mixed	15	Very Low
	Typic Cryoborolls, fine, montmorillonitic	5	High
	Agric Cryoborolls, loamy skeletal, mixed	5	Low
	Lithic Cryorthents, loamy skeletal, mixed	10	Very Low
	Rock Outcrop	5	---



Rock Creek riparian habitat.

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WATER RESOURCES

Four drainages are found within the WSA. Rock Creek is the major perennial stream and Long Hollow, Spring Branch, and Conway creeks are smaller, spring-fed, and, at times, intermittent streams. All of these flow into LaBarge Creek which feeds the Green River. (See the District-wide Analysis, Chapter 2, Water Resources for further details.)

Water quality in the Lake Mountain WSA is considered good. There appears to be little problem with floods along perennial waters. Sediment damage does not appear to be a problem in the WSA at this time. No monitoring has been done to determine sediment quantities.

There are 2.25 miles of Rock Creek on public land which have channel stability ratings (CSR). CSR ratings are used to measure stability through multiple criteria. Normal ratings range from 38 (excellent) to 144 (poor). In 1975 the average CSR in these 2.25 miles was 92.1 (fair to high channel stability). Sixty-two percent (1.4 miles) of the stream miles with CSRs are in an apparent declining trend. In 1976 one mile of stream was fenced to protect aquatic habitat. Since that time, channel stability within the protected area has improved.

Water in the WSA is predominantly used for wildlife, livestock, and recreation. Consumptive use figures are not available. Instream flow needs for fisheries, recreation, and channel maintenance have not been calculated. If current use levels continue, streambank erosion would continue to increase which is conducive to contamination of downstream water supplies. Downstream water use of the WSA's drainages is primarily for irrigation.

VEGETATION

The vegetation within the Lake Mountain WSA is diverse, ranging from sagebrush to coniferous forest. Table LM-3 lists the vegetation types found in Lake Mountain WSA and Map LM-5 shows their approximate distribution. The tops of the ridges and the lower hills of the area are dominated by big sagebrush and interspersed aspen stands. Major forbs within the sagebrush-grass type are pussytoes, buckwheat, phlox, balsamroot, and Indian paintbrush. Major shrubs include big sagebrush, bitterbrush, and rabbitbrush. The grass

type includes bluebunch wheatgrass, needle-and-thread, green needlegrass, spike and Idaho fescue, and bluegrasses.

The broadleaf tree type includes aspen subtype and willow subtype. The aspen subtype is found on the slopes of the hills where there is adequate moisture from snow accumulation. The understory is primarily shrubs, grasses, and sedges; many of the areas have an abundance of forbs. Common shrubs include snowberry, buffaloberry, and currants. Elk sedge, timothy, mountain brome, and slender wheatgrass are the major grass species. Forbs include bluebells, asters, lupines, columbine, and numerous other species. The willow subtype is found along Rock Creek and Sheep Creek.

The conifer type, found at the higher elevations, is dominated by Engelmann spruce and Douglas fir. Mountain shrub is found on the slopes and alluvial fans along the drainages. The main species in this type are curleaf mountain mahogany, big sagebrush, bottlebrush squirreltail, bluegrasses, and snowberry.

The perennial forb type is found on some of the steep rocky slopes. The main vegetative species are milkvetch, buckwheat, and phlox.

No concentration of poisonous plants have been identified in the WSA. Isolated poisonous plants include larkspur and lupine, but no problems have been noted from these plants.

Forest Resources

Much of the timber in the WSA grows on rocky and somewhat shallow soils. Table LM-4 lists the timber resources in the WSA and Table LM-5 lists the commercial forest acreages and volumes of the WSA. Nearly 60 percent of the productive forest acreage is on slopes that are considered inoperable with the logging equipment presently used in western Wyoming.

Access to the forested areas in the WSA is practically nonexistent even though the Deadline Ridge and LaBarge Creek public roads bound the north and south sides of the area. A narrow two-track trail does provide access to the top of Lake Mountain. Although this road does provide limited access, it would need major improvement before it could handle logging traffic. Because of the problems with access, steep slopes, and fragile growing sites, the potential for timber harvesting is low. Additional factors, such as the lack of equipment

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Table LM-3
VEGETATION TYPES

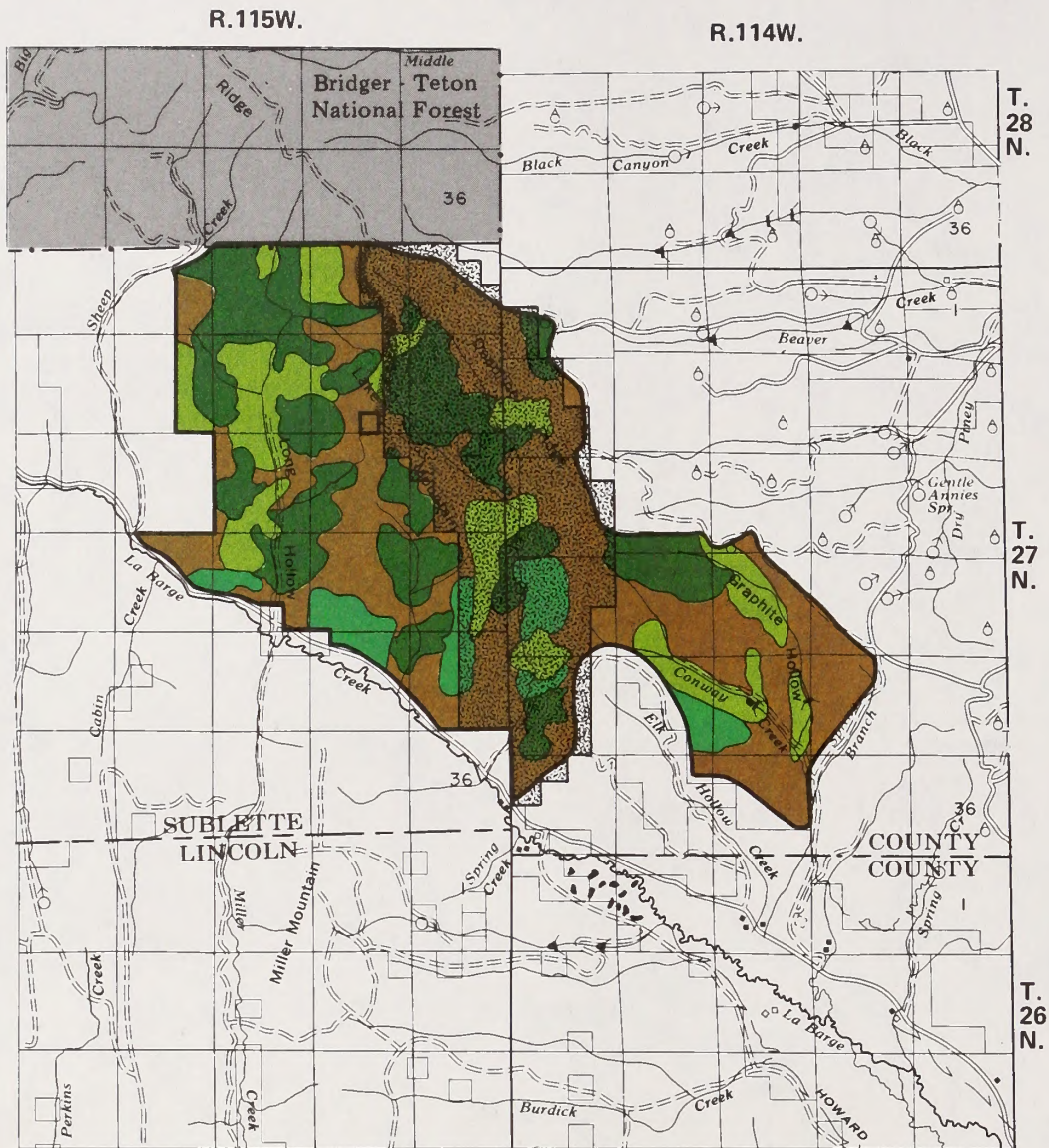
<u>Type</u>	<u>Acres</u>
Grass	100
Sagebrush-Grass	6,404
Conifer	3,562
Broadleaf Tree	2,079
Mountain Shrub	1,685
Perennial Forb	140
Total	13,970

Table LM-4
TIMBER RESOURCES

<u>Type</u>	<u>Percent</u>	<u>Acres</u>
Douglas-fir	15	709
lodgepole pine	16	751
spruce-fir	45	2,102
aspen	24	1,092
limber pine	0	0
Total	100	4,654

Table LM-5
PRODUCTIVE COMMERCIAL FOREST ACREAGE AND VOLUME

	<u>ACEC</u>	<u>Outside ACEC</u>	<u>Total</u>
Acres Under 40% Slope	432	1,095	1,527
Acres Over 40% Slope	944	1,091	2,035
Total Acres	1,376	2,186	3,562
Volume (MBF) Under 40% Slopes	2,903.5	6,676.0	9,579.5
Volume (MBF) Over 40% Slopes	6,344.7	6,651.6	12,996.3
Total Volume	9,248.2	13,327.6	22,575.8
Aspen (acres)	131	961	1,092



-  Wilderness Study Area Boundary
-  Excluded Area
-  National Forest Land
-  Rock Creek Wildlife ACEC
-  Conifer
-  Broadleaf Tree (Aspen)
-  Mountain Shrub
-  Sagebrush - Grass

0 1 2 3 4 5 miles
1/2" = 1 mile

LAKE MOUNTAIN

in the region and because the local timber demand is presently satisfied by other, more suitable areas, makes the WSA undesirable for timber harvesting.

Fire Management

The fire management plan being developed for the Pinedale Resource Area advocates a limited suppression policy. Limited suppression means that fires in many areas would be allowed to burn if conditions are within prescribed limits, e.g., wind speed, percent of humidity. However, in all cases, fire that threatened human life or property would be suppressed.

WILDLIFE

The Lake Mountain WSA provides excellent habitat for a large variety of wildlife. A complete species list is contained in the Sublette Unit Resource Analysis (URA) which is available for review in the Pinedale Resource Area Office.

Terrestrial

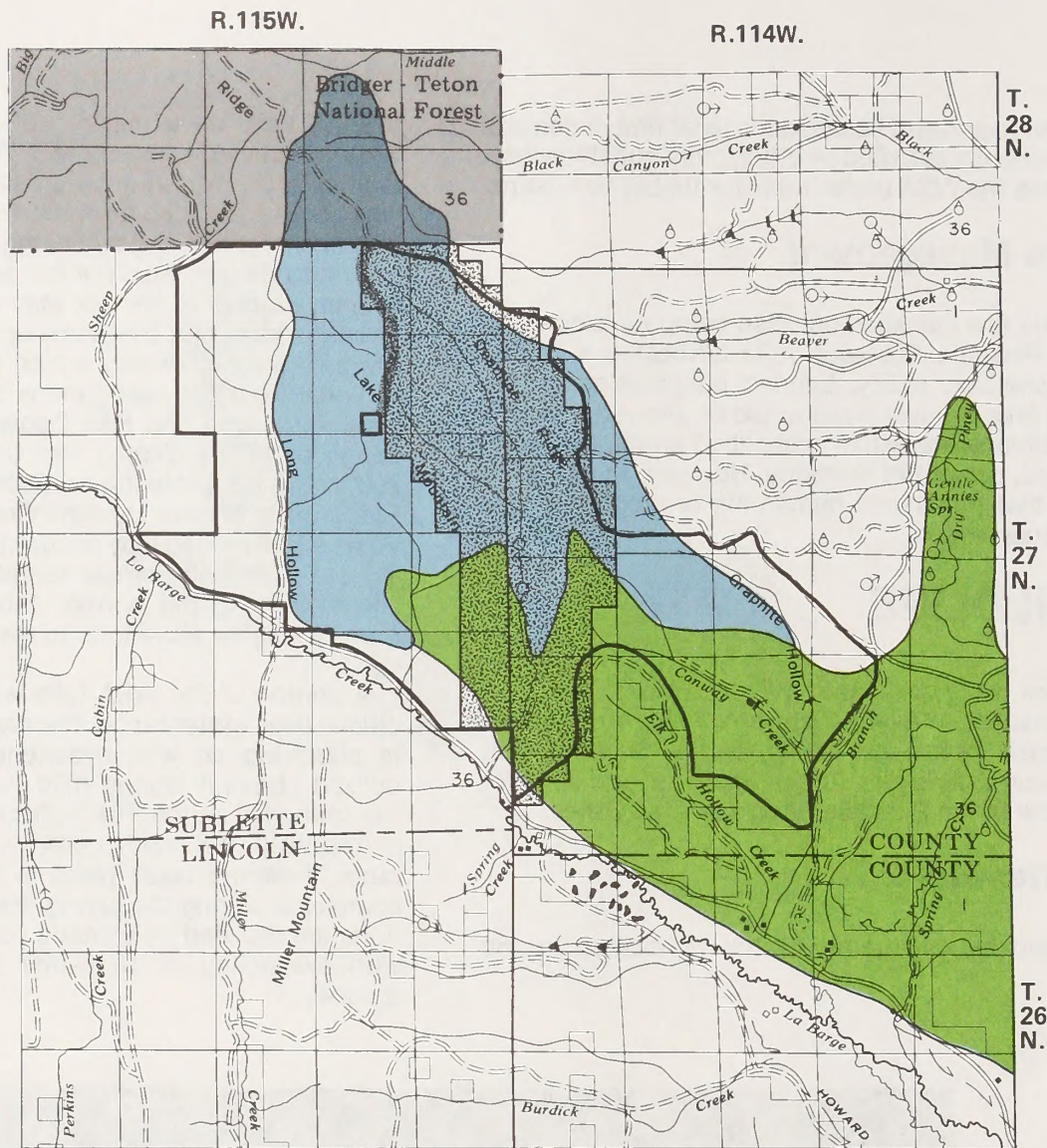
Valuable big game habitat is located in the







WSA. Crucial elk winter range located within the WSA is outlined on Map LM-6. This winter habitat is utilized by elk during severe weather conditions when they are forced down from higher elevations because of snow depth. During mild winters elk use expands over much of the area designated as winter/yearlong. A few elk stay on BLM administered lands during the summer, but the majority move to the higher country on the Bridger-Teton National Forest. Investigations conducted by the Wyoming Game and Fish Department during the spring of 1979 indicated that the majority of the 200 to 250 elk wintering on Rock Creek and Lake Ridge move across LaBarge Creek in the spring. While some calving may occur within the WSA during late spring when snow conditions do not allow elk movement, the normal calving grounds are found at higher elevations to the southwest.

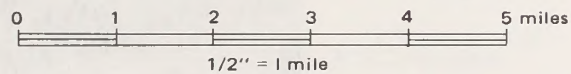
A portion of the WSA falls within the LaBarge crucial deer winter range. The majority of the WSA is classified as winter/yearlong habitat and is utilized primarily during mild winters and during the spring-fall period. The higher elevation portions of the WSA are used primarily as deer summer range. Fawning takes place in the aspen-conifer complexes during the spring. Exact fawning locations are dictated by climatic conditions and vary with availability of snow-free sites and spring green-up.



Typical winter wildlife in Lake Mountain WSA.



-  Wilderness Study Area Boundary
-  Excluded Area
-  National Forest Land
-  Rock Creek Wildlife ACEC
-  Winter/Yearlong Use
-  Winter Use



Map LM-6
Lake Mountain WSA
CRUCIAL ELK HABITAT

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The majority of the WSA is considered to be moose summer range. During severe winter conditions, the animals move down to the willow bottoms and adjacent timbered slopes of LaBarge Creek. The willow bottom and aspen-fir complexes of Rock Creek are preferred sites.

A few black bear are present within the WSA. A young bear was sighted in Rock Creek in June 1979 and again during the fall of 1980. Several sightings have been reported on Deadline Ridge which forms the eastern boundary of the WSA. There have been observations of lynx in the past, however, there is no data on population densities.



Black bear in Lake Mountain WSA.

The pika, a small member of the rabbit family, is fairly abundant within the WSA. They occur on the talus slopes of Rock Creek, Long Hollow, and LaBarge Creek proper.

The Lake Mountain WSA provides habitat for numerous game and nongame birds. The game birds which inhabit the area are sage grouse, blue grouse, and ruffed grouse. Waterfowl use is limited to the beaver pond complexes found in the Rock Creek drainage.

Aquatic

Aquatic habitat within the WSA is limited to two small streams: Long Hollow and Rock Creek. That portion of Long Hollow Creek on public lands is not presently a fishery nor is it considered a potential fishery, due to lack of sufficient water, poor

stream bed composition, and insufficient shading of the stream.

Rock Creek supports a viable population of pure strain Colorado River cutthroat trout. Rock Creek is one of only two streams that are presently known to contain "wholly pure" populations of this species of trout in the Upper Green River Drainage. Because of its rarity, the Colorado River cutthroat trout has been designated as a sensitive species by the BLM and a rare species by the Wyoming Game and Fish Department (WGFD).

Under the guidance of a cooperatively prepared aquatic habitat management plan (East Front AHMP), measures have been taken to perpetuate this species and its habitat on Rock Creek. In 1974 a fish barrier was constructed by the WGFD on lower Rock Creek to prevent hybridization of this pure strain population with fish moving up from LaBarge Creek. Later in 1976, 2.5 miles of fence were built by BLM to form exclosures that would protect one mile of critical stream habitat from excessive livestock use. Studies have been implemented to monitor habitat changes within and outside of the exclosures.

During the past few years, fishing pressure on this small stream has increased considerably. Recent population surveys by the WGFD have indicated a reduction in the base population. Because of this, the WGFD closed the stream to fishing in 1982 to reestablish a stable population level. This closure will remain in effect until conditions warrant reopening the stream to fishing. BLM management recommendations support this action to protect a unique fishery. Further information on the Rock Creek fishery is contained in the East Front AHMP which is available for review in the Pinedale Resource Area Office.

Threatened and Endangered Species

This area is thought to contain suitable nesting habitat for peregrine falcons; however, at this time there appears to be no known peregrine sightings or historical aeries. Sightings of bald eagles have been reported in the area, when the birds are migrating from winter and summer ranges. There are no known bald eagle nest sites in the WSA.

LAKE MOUNTAIN

Rock Creek Wildlife ACEC

Existing wildlife management for the Rock Creek watershed portion of the WSA is described in the Rock Creek Wildlife ACEC Management Plan. The ACEC management prescriptions would protect Colorado River cutthroat trout habitat; allow oil and gas leasing only with a no surface occupancy stipulation; manage and monitor range use such that there would be no damage to the watershed; control off-road vehicle (ORV) use; possible restrictions on timber harvesting in the Rock Creek drainage; protect the crucial big game winter range; and generally manage the watershed to protect wildlife values, while not excluding feasible developments (see Table LM-1).

WILD HORSES

There are no wild horses located in the Lake Mountain WSA. There is a small herd of 40 to 50 horses in the LaBarge herd scattered in an area from 5 to 20 miles from the eastern boundary of the WSA.

LIVESTOCK GRAZING

The WSA contains portions of the Fox-Yose and Upper North LaBarge grazing allotments. All licensed use is by cattle (May 15 to September 30). The basic grazing schedules used in the allotments are shown in Table LM-6. Of the 2,677 AUMs in the two allotments, approximately 1,210 AUMs are located in the Lake Mountain WSA. Approximately 11,740 acres of the WSA are in fair condition and 2,230 acres are in poor condition. The trend of the range condition in the WSA is static on 10,100 acres and improving on 3,870 acres.

All projects (Table LM-7) in the WSA are range-oriented except for the exclosures along Rock Creek. The exclosures were constructed for riparian habitat improvement and for fisheries development. Two sagebrush sprayings were conducted to increase forage production.

Table LM-6

BASIC GRAZING SCHEDULES

Fox-Yose Allotment

376 cattle	5/16 - 6/30	=	440 AUMs
147 cattle	5/16 - 6/30	=	221 AUMs

Upper North LaBarge Allotment

249 cattle	5/15 - 5/31	=	140 AUMs
350 cattle	6/ 1 - 6/14	=	163 AUMs
400 cattle	6/15 - 9/30	=	1,413 AUMs
75 cattle	5/15 - 9/14	=	300 AUMs

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Table LM-7

RANGE IMPROVEMENTS

T. 27 N., R. 114 W.

section 15	reservoir
section 20	exclosure
section 28	fence
section 29	exclosure
section 22	sagebrush spray
section 33	fence

T. 27 N., R. 115 W.

section 2	reservoir
section 4	reservoir
section 9	reservoir
section 14	rain trap
section 15	reservoir
sections 11 & 14	sagebrush spray

WILDERNESS INCLUDING RECREATION

Wilderness Values

The BLM inventoried the Lake Mountain area and all contiguous public lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory, the Bureau determined that the Lake Mountain WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Size

The WSA contains 13,970 contiguous acres of public land. A road (2 and 1/4-mile) penetrates the northern boundary and terminates at a 40-acre parcel of private land on Lake Mountain. The road and private land is excluded or "cherrystemmed" from the WSA (See Map LM-1).

Naturalness

Despite the presence of several manmade intrusions, the WSA appears to retain an essentially natural character. The cumulative effect of all intrusions compromises naturalness to a small degree. Five two-track trails, a short road, and a buck and pole exclosure fence along a section of

LAKE MOUNTAIN

Rock Creek constitute the major intrusions. However, terrain and vegetative screening lessen their impact to the point that they are not noticeable until one is almost upon them. From numerous vantage points within the WSA, the landscape appears entirely natural and unaffected by man.

Outstanding Opportunities

The mountainous terrain, with moderate to dense forest cover (over 25 percent of the WSA), provides many opportunities to avoid the sights and sounds of other users. There are numerous secluded places throughout the WSA where a person could experience outstanding solitude.

The presence of steep mountain slopes, deep canyons, forested areas, and meadow-like openings supply a diversity of recreation opportunities. Activities for which outstanding opportunities exist include hiking, horseback riding, hunting, wildlife observation, ski touring, and nature photography.

The land area available for travel is much larger than acreage figures would indicate, due to the steep mountainous terrain. However, for some activities, movement would be restricted by these steep slopes, while for others, they would provide a challenge. The fact that only one perennial stream, Rock Creek, is found within the WSA might serve to localize user movement along this drainage.

Supplemental Values

Wildlife is the principal supplemental value of the WSA. Species include moose, elk, deer, black bear, grouse, and a genetically pure population of Colorado River cutthroat trout. Rock Creek is one of two streams in the Upper Green River Drainage which contain pure strain Colorado River cutthroat trout. This WSA is important elk winter range for one of the last naturally-wintering elk herds in the area and has been closed several times in recent years to snowmobile use during the crucial wintering period.

Recreation Opportunities

Current use of the WSA for solitude or primitive and unconfined recreation is somewhat limited, although portions of the area provide that opportunity. Currently the main primitive type of recrea-

tion in the area is hunting on foot or by horseback. A secondary benefit of this activity is the opportunity to experience solitude. The Rock Creek drainage provides the best opportunities for primitive recreation and solitude.

The BLM recreation site inventory completed in 1975, identified two undeveloped sites within the Lake Mountain WSA. These sites are located along the LaBarge Creek Road and consist of rock fire rings and other evidence of short-term camping use. Most of the use is from weekend fishermen during the summer, and hunter camps in the fall.

Detailed visitor-use data is lacking for the Lake Mountain WSA. Data is available on total visitor use of an area which encompasses the WSA. A traffic counter was placed on the LaBarge Creek Road in 1973. From June 25 to November 8, a total of 12,515 vehicles were counted. Assuming that 95 percent of the vehicles returned via the same route, approximately 6,000 vehicles used the LaBarge Creek Road in 1973, which is a key access road for the WSA and the Bridger-Teton National Forest (see Map LM-1). LaBarge Creek receives approximately 150 fisherman-days per year, and Rock Creek receives approximately 40 fisherman-days per year.

Hunting season is the highest use period for the WSA. Elk, deer, and moose hunting are considered excellent, and bear hunting is considered good. During the hunting season, September 20 through November 15, numerous hunting camps are established in and around the Lake Mountain area, mainly along LaBarge Creek, Long Hollow, and Deadline Ridge. In conjunction with the hunter use is a substantial amount of horseback and ORV use.

CULTURAL RESOURCES

No Class III cultural inventories have been completed within the Lake Mountain WSA. About 200 acres on or near the northeast boundary have been inventoried at the Class III level. These inventories have been conducted in anticipation of oil and gas well site and access road construction. As a result of these inventories, one prehistoric site was located and recorded. This site is a stone circle or "tipi ring" site. Extrapolating from this data, site density can be predicted at three prehistoric sites per section for areas of moderate slopes in the WSA. Site density in areas with steep slopes could

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be considerably less. Although no historic sites have been recorded in the WSA, there is good potential for finding such sites. Old maps indicate the presence of a corral and a "miner's cabin" in different parts of the WSA, and at least six homestead entries are listed for the WSA. Improvements associated with these homestead entries could be significant historic sites, if they still exist.

VISUAL RESOURCES

The WSA is characterized by steep timbered canyons with scenic rock outcroppings, and narrow canyon bottoms containing small streams lined with aspens and willows. The WSA is rated as having a high visual sensitivity, indicating that the viewer has a major concern for the scenic quality of the area. The overall visual management class (V_{RM}) for the area is Class II, indicating that changes should not be evident in the characteristic landscape. (See the District-wide Analysis, Chapter 2, Visual Resources, for further information.)

NOISE

Present noise levels within the Lake Mountain WSA are a result of two sources; highway traffic and oil and gas drilling. Highway traffic along LaBarge Creek Road is not significant because road use is sporadic and produces noise levels of under 40 decibels within the WSA. Drilling for oil and gas in the LaBarge oil fields on the east side of Lake Mountain WSA can have a significant effect on noise levels. The east side of the WSA could be exposed to significant noise levels (over 65 decibels), with the decibel level decreasing as one moves away from the drilling operations or the operations are screened by topography and vegetation.

LAND USE CONSTRAINTS

Within the WSA is one "cherry-stemmed" access road leading to 40 acres of private land. This parcel has been subdivided into two 20-acre parcels and is owned by two individuals. There is no legal right-of-way for this road and it provides only seasonal physical access. A right-of-way is held by BLM for a road along Long Hollow Creek, however, this road has never been constructed because legal ac-

cess has not been acquired across the 160 acres of private land in sections 22, 26, and 27, T. 27 N., R. 115 W. Land exchanges have been pursued for both private parcels in the WSA, but efforts have been unsuccessful.

The lands within the WSA are zoned RC, Rural Conservation, by Sublette County, and the adjacent lands are zoned AI, Agricultural. The communities nearest the WSA are LaBarge and Big Piney. Forest Service lands adjoining the WSA are being managed for multiple use, with no special designation proposed. Lands to the north and east of the WSA are part of the proposed Riley Ridge Oil and Gas Development Field which is being evaluated under a separate EIS.

SOCIOECONOMIC CONDITIONS

Population

The Lake Mountain WSA is located in Sublette County, which had a 1980 population of 4,548. The town of LaBarge (in Lincoln County) is the closest incorporated town to the WSA (approximately 10 miles east of the WSA), and had a population of 302 in 1980 (Census Bureau 1980). The towns of Big Piney and Marbleton are located to the north of the WSA and had a 1980 population of 530 and 537, respectively. The town of Kemmerer is the major trade center nearest the WSA; and had a 1980 population of 3,273, with a ten-year increase of 43 percent.

Employment and Income

Total employment in Sublette County was 2,248 in 1979, which represents a nine percent increase over the five-year period from 1974 to 1979. No employment can be directly attributed to the Lake Mountain WSA.

Total labor and proprietors income in Sublette County increased 72 percent from \$19.7 million in 1974 to \$33.8 million in 1979. Income from recreation use of the WSA is included with the retail and services sector of labor and proprietors' income. Income from livestock use of Lake Mountain WSA would be included with the farm proprietors and farm sector of total labor and proprietors' income. (See the District-wide Analysis, Chapter 2, Socioeconomic Conditions for further details.)

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There is currently no leasable mineral production from the Lake Mountain WSA.

Economic Value

The existing level of economic benefits (see Appendix C) from the Lake Mountain WSA are derived from recreation and grazing use in the WSA. Net benefits from livestock grazing in the WSA are not expected to be affected by designation of an ACEC or wilderness area, so they will not be considered further in this analysis.

Lifestyles and Attitudes

Sublette County has traditionally been structured around agriculture, with 29 percent of the

labor and proprietors' income derived from the farm sector in 1979. Oil and gas operations have also provided employment opportunities since the early 1930's. Currently the mining sector (which includes the oil and gas industry) provides 13 percent of the labor and proprietors income in Sublette County.

The trend in Wyoming resident's attitudes towards wilderness management was reflected in a survey conducted by the University of Wyoming (Warren and Warder 1978). Residents generally did not understand the concept of wilderness. It was felt that wilderness designation would "lock up" the resources. An attitude commonly expressed was that there was enough wilderness in Wyoming and land could be best managed under "multiple use." For additional information on public attitudes see Appendix D.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumptions were used for impact analysis:

1. The BLM mineral report addressing the mineral potential of this WSA assigns a moderate and high potential rating for oil and gas development. This rating coupled with the large amount of pre-FLPMA leases (approximately 50 percent) indicates that extensive exploration would take place and moderate development can be expected.
2. That portion of the WSA east of the ACEC will receive the majority of the oil and gas development activities, based on the high potential rating assigned to this area in the BLM mineral report.
3. Other mineral development potential (coal, phosphate, copper) is rated low and subsequent impacts from the development of other minerals are assumed to be negligible. (The moss rock "Common Use Area" is an exception, use of this area is expected to increase.)
4. Regardless of whether the Lake Mountain WSA is designated wilderness or not, the Rock Creek drainage will continue to require special management. It is presently managed according to the Rock Creek Wildlife ACEC Management Plan.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action moderately adverse impacts would occur to air quality. There would be an increase in the total suspended particulates (TSP) and other pollutants within the WSA, due to increased oil and gas activities. The possibility of a hydrogen sulfide (H_2S) spill or blowout affecting the area would also increase. The Rock Creek ACEC could be significantly impacted by H_2S , should a spill or blowout occur along the ridges surrounding this deep and narrow drainage. This potential also exists for the Long Hollow, Graphite Hollow, and Pine Hollow areas.

Topography

Under the proposed action moderately adverse impacts would occur to topography. Due to the steep narrow ridges in much of the WSA, the anticipated oil and gas activities would modify the existing topography through construction of sidehill road cuts and well sites. Some of this activity could be mitigated and rehabilitated; however, full development of the estimated gas reserves within the WSA would result in long term to permanent surface modification.

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Soils

Under the proposed action moderately adverse impacts would occur to soils. These adverse impacts would result primarily from anticipated oil and gas activities. Soils within the Rock Creek Wildlife ACEC would be protected from manmade modification. However, there may be a slight increase in erosion susceptibility without improved livestock management practices. Soils outside the ACEC which are disturbed by oil and gas activities, would incur loss of topsoil.

In the area east of the ACEC, extensive oil and gas activities would cause the erosion class to deteriorate from moderate to critical. This adverse impact could even be greater if an extensive road system is developed.

Water Resources

Under the proposed action minor adverse impacts would occur to water resources. These adverse impacts are primarily a result of anticipated oil and gas activities. Water quality and channel stability would probably decrease in those streams outside the Rock Creek Wildlife ACEC. An increase in sediment load and contaminants may occur in these streams, but stream flow should not change.

Vegetation Including Forest Resources

Under the proposed action vegetation (including forest resources), when viewed purely as a natural resource, would incur minor adverse impacts. Anticipated oil and gas activities would disturb vegetation in the area outside of the ACEC. ACEC management prescriptions would prohibit surface disturbance within the ACEC. Any oil and gas leases issued within the ACEC would require off-site drilling. (Use of the forest resource for timber is discussed in Socioeconomic Conditions.)

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Fire Management

Fire suppression would be constrained within the ACEC, because wheeled or tracked vehicles would not be allowed within the ACEC boundaries, except in emergency situations.

Wildlife

Under the proposed action moderately beneficial impacts would occur to wildlife. Habitat for elk, deer, moose, bear, raptors, and small game would be protected within the ACEC. The off-road vehicle restrictions and other MFP decisions would greatly reduce impacts to wildlife on the remainder of the area. The establishment of the winter closure area for the elk winter range would have a long term beneficial impact on the elk herd in that area.

As oil and gas exploration and development increases outside the ACEC, a loss of crucial elk and deer winter range would occur. This is especially significant east of the ACEC.

The ACEC management prescriptions would have a beneficial impact on the fisheries habitat within the Rock Creek drainage. Protection of fisheries and wildlife habitat is the primary goal behind establishment of the Rock Creek Wildlife ACEC. The ACEC management plan would ensure that adequate steps are taken and continued, to protect and improve the habitat for Colorado River cutthroat trout. The numbers and sizes of this sensitive species would be maintained or increased.

Livestock Grazing

Under the proposed action no impact would occur to livestock grazing. There would be no change in the amount or type of livestock use from the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock. There would be some loss of efficiency for livestock management in that all motor vehicles would be excluded from the ACEC; although no vehicles are used in the ACEC at present. Motor vehicles would also be restricted to existing roads and trails in the remainder of the WSA.

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Spraying of vegetation would be prohibited within the ACEC, unless it would be beneficial to wildlife habitat, foregoing a potential increase in forage. Range improvements such as fences and reservoirs would continue to be maintained by conventional means, and new range improvements could be authorized. Disturbance associated with anticipated oil and gas activities may cause some loss of available forage.

Wilderness Including Recreation

Wilderness Values

Under the proposed action moderately adverse impacts would occur to wilderness values. Implementation of the proposed action would preserve some of the wilderness character of the WSA. Within the ACEC, essentially all the wilderness characteristics would remain intact. However, activities allowed outside of the 5,264 acre ACEC could be heard within the ACEC, resulting in reduced opportunity for solitude. The remaining 8,706 acres outside of the ACEC would lose most of their wilderness character, due to the adverse impact on the natural character of the area resulting from anticipated oil and gas activities.

The overall ecological uniqueness and contribution of this WSA to the regional diversity of the wilderness system is somewhat limited, so little loss to the National Wilderness Preservation System would be realized. It should be noted, however, that the opportunity to include one of the best existing drainages containing the sensitive Colorado River cutthroat trout within the National Wilderness Preservation System would be lost.

The total impact on the wilderness character is only moderately adverse because the ACEC encompasses the majority of the area identified as having high wilderness values. ACEC management would minimize the adverse impact to the wilderness character of the WSA.

Recreation Opportunities

Under the proposed action minor beneficial impacts would occur to recreation opportunities. Hunting opportunities would increase in the short term. The elimination of off-road vehicle use within the ACEC would provide escape areas for wildlife, while access in the area outside the ACEC would continue to be available through the use of existing roads and trails. The construction of new

roads for oil and gas activities outside the ACEC would provide increased access to hunters, however, the disturbance associated with the oil and gas activities would cause a decrease in hunting quality.

Motor vehicle use outside of the ACEC would be limited to existing roads and trails. A seasonal closure (particularly snowmobiles) would also be enforced to protect wintering wildlife. Both of these actions would have an adverse effect on off-road vehicle enthusiasts.

Fishing use of Rock Creek would not change in the short term because the Wyoming Game and Fish Department has closed the stream to all fishing. In the long term, this closure would benefit the fisheries, resulting in an increased population and a subsequent improvement in fishing opportunities.

Cultural Resources

Under the proposed action no impacts to cultural resources would occur. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under the proposed action moderately adverse impacts would occur to visual resources, due to anticipated oil and gas activities. If the proposed action is implemented, the ACEC would remain as Visual Resource Management (VRM) Class II. The remainder of the WSA would decline into Class III as oil and gas exploration increases.

Noise

The noise level within the WSA would increase as the amount of oil and gas activity increased, having a highly adverse impact. The noise level in the ACEC would be less, but would still increase as activities adjacent to the area increase. The U. S. Air Force Strategic Air Command's low-level training flights for B-52 bombers over the WSA would continue sporadically under the proposed action.

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Land Use Constraints

The proposed action would not conflict with county zoning nor would it conflict with the management of adjoining state land. There would be no conflict in management direction with the Forest Service lands adjoining the WSA. No change in county zoning would be necessary. The opportunity to construct a road up Long Hollow would remain. An easement would be required to legally cross the 160 acres of private land in sections 22, 26, and 27, T. 27 N., R. 115 W.

Socioeconomic Conditions

Timber and oil and gas resources in the WSA would be affected by the proposed action. The Rock Creek Wildlife ACEC Management Plan would withhold 9,248 thousand board feet (MBF) of timber and five billion cubic feet (Bcf) of natural gas from potential production; economic returns from these resources would be foregone. No quantifiable change in visitor-days was identified in the recreation section.

The proposed action would have a beneficial impact to the general public. The common use area established for removal of the moss rock building stone would remain open to accommodate an expected increase in public use of this resource.

Population

The proposed action would have negligible effects on the total population of Sublette County or the region.

Employment and Income

Employment and income from the Lake Mountain WSA would not be affected in the short term from management of the ACEC. There is currently no timber being harvested from the WSA, and all oil and gas exploration in the WSA has taken place outside the ACEC. The ACEC management would preclude production of 9,248 MBF of timber, and any additional employment opportunities from harvesting this timber would be foregone. This could have a long-term adverse effect on the timber industry in Sublette County and the region, depending on the future demand for wood products and the availability of comparable substitute supplies of timber. However, the WSA has never been harvested under past market conditions;

precluding future harvesting would have a negligible impact on the timber industry within the regional economy. The proposed action would allow harvesting of 13,328 MBF that has not previously been considered for harvesting and could benefit the timber industry in the long term.

The proposed action would have negligible effects on employment and personal income resulting from the oil and gas industry (assuming the same number of wells would be drilled regardless of ACEC management, although well location outside the ACEC may not be the company's preferred location). Existing and future employment in gas sweetening plants would be shortened by the amount of time it would take to process the five Bcf of natural gas that would be foregone.

Revenues and Taxes

Withholding the ACEC from timber and oil and gas production (six percent loss possible) would result in lost revenue; or stated another way, would forego the opportunity to produce (opportunity cost) the resource and generate revenue for the local economy. Receipts from the sale of timber and oil and gas would depend on the time and rate at which these resources would be developed. Indirect revenue that results from additional business purchases in the local economy would also be foregone.

If timber and oil and gas resources were withheld from development, additional tax revenues would be foregone from Sublette County and the state. Currently an ad valorem production tax is levied on gas production (based on assessed valuation and county mill levy) in addition to a state six percent severance tax (see the District-wide Analysis). It is doubtful that additional facilities would be constructed solely to harvest and extract these resources, therefore, no additional ad valorem property tax would be expected. Any sales tax revenue that would have been generated from sales of goods would also be foregone.

Additional revenues would be foregone from federal royalties and timber sales that would normally be returned to the state. Federal royalties are collected on gas produced from federal lands; and range between 12.5 and 16.67 percent of total production, depending on the terms of the lease (50 percent of the royalties are returned to the state). Five percent of revenues collected by BLM from timber sales would also be returned to the state.

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Economic Value

The current market value (1981 dollars) of the 9,248 MBF of timber and 5 Bcf of natural gas foregone is \$1.67 million (\$181.31 per MBF, BLM Instruction Memorandum 81-335) and \$35 million (\$7.00 per Mcf, Foster Associates 1981), respectively. The BLM Input/Output Models for the Upper Main Stem of Colorado and southern Wyoming shows profits from timber production and oil and gas production of 9.98 and 40.58 percent, respectively. Using profits as a proxy for producers surplus (see Appendix C) the total net benefits (not discounted) foregone from timber and gas production is estimated at \$167,000 and \$14.2 million, respectively. No impacts are anticipated on the livestock industry.

IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Under wilderness management minor adverse impacts would occur to air quality. Wilderness designation would assist in maintaining existing air quality and other natural resource values. However, due to constraints on wilderness management (see District-wide Analysis, Chapter 1, BLM Wilderness Management Policies), some adverse impacts would occur, largely due to development of pre-FLPMA oil and gas leases.

A slight increase in total suspended particulates (TSP) and other pollutants would occur within the WSA due to increased oil and gas exploration and development activities on lands adjacent to, and in some instances, within the WSA.

The possibility of a hydrogen sulfide (H_2S) spill or blowout affecting the area would also increase. The Rock Creek area could be significantly impacted by H_2S , should a spill or blowout occur along the ridges surrounding this deep and narrow drainage. This potential also exists for the Long Hollow, Graphite Hollow, and Pine Hollow areas.

Topography

Under wilderness management minor adverse impacts would occur to topography. Allowed oil and gas activities on pre-FLPMA leases would modify the topography, particularly in the high potential oil and gas area.

Soils

Under wilderness management minor adverse impacts would occur to soils. Wilderness designation would limit surface-disturbing activities in the WSA. Allowed oil and gas activities on pre-FLPMA leases would be subject to at least nondegradation requirements. The majority of soils would be maintained in their existing condition. Erosion susceptibility would continue to increase without improved livestock management practices.

Water Resources

Under wilderness management minor adverse impacts would occur to water quality. Wilderness designation would help to preserve water quality in the WSA. Those streams outside the ACEC would remain in their existing condition unless extensive oil and gas development occurred on those pre-FLPMA leases within the designated wilderness. If pre-FLPMA lease development occurs in the area outside the Rock Creek ACEC, water quality and channel stability would probably decrease. An increase in sediment load and contaminants may occur in these streams.

Vegetation Including Forest Resources

Under wilderness management vegetation (including forest resources), when viewed purely as a natural resource, would incur minor adverse impacts. Allowed oil and gas activities would continue to cause vegetation loss, due to disturbance associated with oil and gas activities. However, leases would not be issued within the ACEC, giving maximum protection to the Rock Creek drainage. Motor vehicles would be prohibited within the WSA, decreasing the disturbance to vegetation.

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The opportunity to manage the total 3,562 acres of timbered lands for production within the WSA would be lost. This would eliminate not only timber harvesting (see Socioeconomic Conditions) but potential firewood and Christmas tree sales; potential treatment of insect infestation; most controlled burning; the opportunity to stimulate the forest growth rate; increased board foot production; and the possible elimination of some benefits to air quality (higher rate of CO₂ to O₂ recycling) and water (sometimes water yields can be increased by forest manipulation).

Fire Management

Suppression of naturally occurring fires would usually be precluded. Fire suppression methods would be constrained because motor vehicles would not usually be allowed within the WSA, except in emergency situations.

Wildlife

Under wilderness management moderately beneficial impacts would occur to wildlife. Wilderness designation would benefit all wildlife species within the WSA. The primary benefit to terrestrial wildlife would be the protection of elk winter range and calving areas, spring through fall habitat for moose and deer, and raptor nesting areas. The total number of animals in the WSA would remain about the same or would increase slightly, as more area would be protected and fewer disturbances allowed. However, if extensive oil and gas activities occurred on pre-FLPMA leases outside the ACEC, a loss of crucial elk and deer winter range would occur.

Motor vehicles would be prohibited within the WSA, except for the motor vehicle use associated with allowed oil and gas activities; this restriction would lessen the disturbance to wildlife and their habitat.

Wilderness management would have a beneficial impact on fisheries habitat, because most of the land surrounding the Rock Creek drainage also would be protected. This would reduce the likelihood of allowed oil and gas activities impacting the fisheries habitat. Initially, the increased publicity associated with wilderness designation may cause an increase in visitors to the WSA. If this happened, the added pressure on the fisheries would be disastrous. However, most of this impact could be mitigated if the Wyoming Game and Fish Department continues the temporary fishing closure that is now in effect.

Livestock Grazing

Under wilderness management no impact would occur to livestock grazing. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. There would be no change in the amount or type of livestock use from the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock.

There would be some loss of efficiency for livestock management in that motor vehicles would be excluded from the WSA. The existing range improvements such as fences and reservoirs would remain. Motorized equipment could be used to maintain the one reservoir requiring heavy equipment maintenance and the rain trap, but not to construct new facilities. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock.

There also would be some minor loss of potential additional forage production because spraying and prescribed burning would be prohibited in the wilderness area.

Wilderness Including Recreation

Wilderness Values

Under wilderness management minor adverse impacts would occur to wilderness values, due to allowed oil and gas activities. Wilderness designation of the Lake Mountain WSA would help preserve the existing wilderness character of the area. However, the wilderness management opportunities would be limited, due to anticipated oil and gas activities in the area outside of the ACEC. Of the 13,970 acres examined for wilderness values during the study process, wilderness characteristics were concentrated on 5,200 acres. The remaining 8,770 acres of the WSA met the intensive inventory criteria; however, the wilderness quality of these lands is significantly less.

The identified 5,200-acre area is an extremely sensitive area due to the steep slopes and the sensitive nature of the Colorado River cutthroat trout inhabiting Rock Creek. Very little surface-disturbing activity could be allowed without significantly reducing the wilderness character of the area. Any significant increase in the number of

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facilities in the area, or reduction in protection for this smaller area, would eliminate any opportunity to preserve the wilderness values.

Wilderness designation of the WSA would provide more complete protection of the Rock Creek drainage and the lands surrounding it. It would add a unique and sensitive species to the National Wilderness Preservation System.

Recreation Opportunities

Under wilderness management minor beneficial impacts would occur to recreation opportunities. The elimination of motor vehicles within the WSA would decrease the amount of vehicle-dependent recreation in the WSA. However, the decreased disturbance to wildlife would improve hunting quality.

Initially, the increased publicity associated with wilderness designation could draw more visitors to the WSA. Opportunities to experience solitude and wilderness types of recreation, such as hiking, horseback riding, etc., would be preserved.

Fishing use of Rock Creek would not change in the short term because the Wyoming Game and Fish Department has closed the stream to all fishing. In the long term, this closure would benefit the fisheries, resulting in an increased population and a subsequent improvement in fishing opportunities.

Cultural Resources

Under wilderness management no impacts to cultural resources would occur. Allowed oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under wilderness management moderately adverse impacts would occur to visual resources. If the WSA was designated wilderness, BLM would upgrade the classification to Class I and would manage it as such. However, allowed oil and gas activity on pre-FLPMA leases would adversely impact some of the visual values of the WSA. In the

very long term, after the intrusions are removed and reclamation is complete, the original visual qualities may return.

Noise

The noise level in the WSA would increase due to the allowed oil and gas activities on pre-FLPMA leases, resulting in a highly adverse impact. This adverse impact could be long term if production facilities were installed. Negotiations would be initiated with the U.S. Air Force to alter the route of their low-level bomber training flights.

Land Use Constraints

Wilderness management would not conflict with county zoning. However, there would be a conflict in management direction with the Forest Service lands adjoining the northern boundary of the WSA and with the state and private lands along portions of the southern and western boundaries. No changes in county zoning would be needed. Wilderness designation would preclude construction of a road to Long Hollow (BLM right-of-way). An easement would still be required to legally cross the 160 acres of private land in sections 22, 26, and 27, T. 27 N., R. 115 W., to provide access to the WSA. A 40-acre parcel of private land would be isolated within the wilderness area.

Socioeconomic Conditions

The impacts of wilderness designation on timber and oil and gas resources would be similar to the proposed action, but more intense due to the larger amount of timber and gas that would be withdrawn from potential production (approximately two-and-a-half times greater). Economic returns from recreation in the region would be the same as under the proposed action; a change in type of use would occur, but not quantity of use.

Wilderness designation would restrict use of the established Common Use Area for moss rock building stone. Approximately half of the use area is within the WSA. This impact could be projected as a loss of approximately 15 tons per year. However, public use of this resource would probably shift to that portion of the Common Use Area outside of the WSA.

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Population

Designation of the WSA as wilderness would have negligible effects on the total population of Sublette County or the region. Drilling fewer gas wells in the WSA may shorten the time drilling crews (temporary residents) spend in Sublette County, or possibly reduce the total number of temporary residents.

Employment and Income

Employment and personal income from resource use of the Lake Mountain WSA could be affected in the short term. Withholding approximately 13 Bcf (about 12 percent) of gas from production could result in a reduction in the total number of wells drilled and pipeline systems constructed. No short-term impacts on employment or income would be anticipated from the withdrawal of timber resources from production.

Long-term impacts on employment and income would result if the demand for timber reaches a point where a timber sale would be warranted in Lake Mountain WSA. Long-term employment in gas sweetening plants would be shortened by the amount of time it would take to process 5 Bcf of sour gas (the other 8 Bcf is presumably sweet gas from shallower formations).

Revenues and Taxes

Withholding the WSA from timber and gas production would result in a potential loss of direct and indirect revenue generated in the region from the sale of 22,576 MBF of timber and 13 Bcf of gas. Ad valorem tax, severance tax, sales tax, and royalties from the sales of these resources would also be foregone (see the proposed action).

Economic Value

The current market value (1981 dollars) of the 22,576 MBF of timber and 13 Bcf of natural gas foregone is \$4.09 million (\$181.31 per MBF, BLM Instruction Memorandum 81-335) and \$54.52 million (\$7.00 per Mcf deep gas, Foster Associates 1981; and \$2.44 per Mcf shallow gas estimated

from the Natural Gas Policy Act of 1978), respectively. Using profits as a proxy for producers surplus (see the economic value section of the proposed action) the net benefits (not discounted) foregone from timber and gas production is estimated at \$408,500 and \$22.12 million, respectively. Timber, as a renewable resource, could be harvested again and again in the very long term. No impacts are anticipated on the livestock industry.

SUMMARY OF IMPACTS

Site-specific impacts for the Lake Mountain WSA are summarized as follows: Implementation of the proposed action would result in minor to moderately adverse impacts to the present natural resource base. Wilderness designation would result in very little change from the existing situation. Minor adverse impacts would occur to the present natural resource base under wilderness management. The adverse impacts occurring under the proposed action and the wilderness alternative are a result of increased oil and gas activities which are anticipated to occur.

Wilderness values would be adversely impacted under the proposed action and the wilderness alternative, due to anticipated oil and gas development. The proposed action would result in moderately adverse impacts and the wilderness alternative would result in minor adverse impacts.

Under the proposed action and the wilderness alternative, minor beneficial impacts would occur to recreation opportunities. This beneficial impact reflects a slight increase in hunting and fishing opportunities.

Under the proposed action and the wilderness alternative, beneficial impacts would occur to the present socioeconomic conditions. Moderately beneficial impacts would occur under the proposed action, and minor beneficial impacts would occur under the wilderness alternative. The wilderness alternative would have less beneficial impacts because the timber resources could not be harvested.



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CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

The Raymond Mountain WSA is located in the Sublette Mountain Range in southwestern Wyoming, approximately 60 miles south of Grand Teton National Park (see Map RM-1). The WSA is approximately 19 miles long and 4 miles wide at the widest point, and contains 32,936 acres. The WSA has diverse vegetation and steep topography. It is forested over major portions of the WSA, interspersed with open parks. The southern end of the WSA gives way to big sagebrush stands and rock outcrops.

Several creeks are located in the canyons of the WSA; Huff and Raymond creeks contain a pure strain of Bonneville or Bear River cutthroat trout. The area is important moose, deer, and elk habitat.

The decision to make the area a Wilderness Study Area was appealed to the Interior Board of Land Appeals (IBLA). On November 3, 1981, the IBLA ruled that the area rightly qualifies as a Wilderness Study Area. The WSA is one of two within the Wyoming portion of the Overthrust Belt.

Key issues in the study of the WSA for wilderness suitability were oil and gas development because of the Overthrust Belt potential; wildlife values as summarized above; and wilderness values in this WSA and nearby Forest Service lands. Local public opinion also indicated that wilderness designation was not wanted, however, protection of key values in the area was highly desirable.

This site-specific analysis of the Raymond Mountain WSA analyzes the impact of wilderness and nonwilderness management. In all alternatives considered in the District-wide Analysis; the Raymond Mountain WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternative 3, the WSA would be under nonwilderness management; under Alternatives 1 and 2, the WSA would be managed as wilderness.

PROPOSED ACTION AND ALTERNATIVE

The proposed action is to recommend to the President, via the Secretary of the Interior, that this WSA not be designated wilderness. Under the proposed action the WSA would be managed under the guidelines of the Kemmerer Resource Area Pioneer Trails Management Framework Plan (MFP). This MFP was amended in 1981 to examine the suitability of this WSA for wilderness and to make coal management decisions for the Kemmerer Resource Area. Specific decisions contained in the MFP may be obtained from the Kemmerer Resource Area Office and key decisions are listed on Table RM-1.

Under MFP management 13,530 acres in the WSA are designated as the Raymond Mountain Wildlife Area of Critical Environmental Concern (ACEC). The ACEC will be managed primarily to protect the sensitive Bonneville or Bear River cutthroat trout and its habitat; and big game habitat (elk, deer, moose), including crucial winter habitat for elk and deer. The ACEC management plan includes the provisions outlined in the Thomas Fork Aquatic Habitat Management Plan and also recommends:

1. As oil and gas leases come up for renewal in the ACEC, they will be reviewed on an individual basis to determine if there is a need for no surface occupancy stipulations to protect identified ACEC values.
2. Mineral exploration and development will be allowed in a manner compatible with the ACEC values.
3. A seasonal closure to minerals exploration in key areas (October 1 to November 1) will be implemented to minimize interference with big game hunting and trailing of livestock.
4. All off-road vehicle (ORV) activity will be limited to existing roads and trails with the following

RAYMOND MOUNTAIN

Table RM-1

MFP DECISIONS AFFECTING RAYMOND MOUNTAIN WSA

Resource Area and MFP Decision	MFP Multiple-Use Recommendation	Discussion
Kemmerer L-1.1	Allow the continuation of the TV translator site right-of-way on the existing communication site in T. 26 N., R. 119 W., sec. 6, NW 1/4 SE 1/4. Do not allow any new rights-of-way on this site.	This TV translator antenna serves the Thomas Fork Valley residents and is appropriately located in the side of the Sublette Range. It is doubtful this location would be suitable for any other type of communication site, due to its location on the side of the mountain range. The road to the site can be seen from U.S. Highway 89, reducing the visual quality as well as the recreational sightseeing experience, otherwise, there are no conflicts.
Kemmerer M-1.1 W-1.5 WLT-1.3 R-1.4	Allow oil and gas exploration and development subject to the application of specific stipulations to mitigate impacts. Review each geophysical or drilling proposal on a case-by-case basis, apply stipulations, and monitor the activity to ensure compliance with stipulations. As each lease comes up for renewal review on a case-by-case basis to determine whether there will be surface occupancy or no surface occupancy lease requirements, or if special restrictions need to be applied to individual leases.	Existing BLM geophysical and drilling application procedures provide for environmental protection. However special stipulations are often necessary to deal with certain situations. By reviewing each case in terms of other resources, special stipulations may be developed to deal with resource conflicts. Compliance monitoring is essential to ensure that stipulations are followed. By reviewing each lease as it comes up for renewal, conditions can be applied that will protect the resources.
Kemmerer F-1.1	Forest activity plans and harvesting schedule will be subject to and priority given to recreation, wildlife, and watershed values. Each harvest plan will be reviewed on an individual basis by a multi-disciplinary team to ensure there is no impairment to recreation, wildlife, and watershed values.	Timber is a locally important industry. Forest management can benefit other land uses. Use of standard sale design technique in relation to road design, maximum slope limitations, and stream protection would be mandatory.
Kemmerer F-1.2	Meet commodity and public service demands for minor forest products such as fuelwood, posts, poles, Christmas trees, and house logs from the intensively managed forest stands. However, sale layout will be designed by a multi-disciplinary team to achieve maximum fringe benefits while meeting this demand.	Wood products such as these are often easier and cheaper to use by individuals in rural areas than other substitute materials. Also, certain individuals are dependent upon the materials being available; e.g., fuelwood. These sales can be used to accomplish management objectives such as thinning, utilization of dead and/or cull materials, slash clean-up, and removal of insect infested trees. This would result in a beneficial social impact. The public from nearby communities could obtain permits for forest products needed.
Kemmerer RM-1.1	Initiate actions to properly stock the allotment based on range suitability study and range survey.	Harvesting activities would disrupt livestock and wildlife locally but could be of benefit to the maintenance of watershed quality. Could be of significant benefit to wildlife if removal of products was designed to open aspen stands for regeneration, juniper stands for browse reproduction, and to open small parks in closed conifer stands. Terrain in the allotment is very steep and mountainous, and many operations have been converted from sheep to cattle without a suitability study. Excessive utilization is occurring in drainage bottoms and around perennial waters. These popular areas are declining in range condition while other areas are stable. It is suspected that the allotment is overstocked with cattle. The range and suitability study will include use of existing suitability criteria, plus the use of field observations. The important positive impact of this recommendation would be improvement in range condition, watershed condition, and wildlife habitat condition.
Kemmerer RM-1.2	Implement a grazing management system based on the physiological requirements of the riparian vegetative associations. Exclude major range improvement development within the ACEC area.	A grazing system is needed to maintain plant vigor, density, composition, and maintain production at the proper stocking rate. The grazing system will be tailored to the ACEC and multiple use values of the area.
Kemmerer RM-1.3 W-1.2 W-1.3	Spray and/or burn areas within the Raymond Mountain WSA to maintain and/or increase livestock forage production. Omit any spraying in the ACEC, or any sites where there is any possibility of impacting riparian or aquatic habitat. Use fire on all feasible sites in a manner which complements the multiple-use goals of the area. Reseeding and rest from grazing will be determined by site specific spray and/or burn plans. No spraying will be accomplished before it is firmly determined that forage production cannot be satisfactorily increased or maintained through grazing management systems recommended in RM-1.2.	Maintain the natural fire role in the ecosystem within the Smiths Fork Allotment. Spraylog or burning of 30,000 acres within the allotment could produce 20,000 AUMs within the study area, 15,400 acres could be treated to produce approximately 10,780 additional AUMs. The results from burns conducted in the resource area and adjoining Forest Service lands, indicate very favorable results with no reseeding and one season or less of rest from grazing. Any spraying or burning will be tailored to the ACEC and multiple-use values of the area. Spraying may not be necessary to satisfy forage needs. Fire has played an important role in this area's vegetative patterns and types.

RAYMOND MOUNTAIN

Table RM-1
(Continued)

Resource Area and MFP Decision	MFP Multiple-Use Recommendation	Discussion
Kemmerer RM-2.2 W-1.4 WLT-1.2	Limit all ORV activity to existing roads and ways with the following exceptions. The following roads and ways are to be closed: Raymond Canyon, White Canyon, and the two ways off of IGO Speedway into Raymond Canyon. Institute a seasonal motorized vehicle closure of crucial elk and deer winter range during those years where such action is warranted by severe climatic conditions (normally December 1 to May 15). Yearly coordination meetings with Wyoming Game and Fish Department will be held to determine if conditions warrant closure.	ORV limitations are necessary to keep the resources stable for all activities and to allow for reasonable access to the area by all activity users. A limited designation would provide all resource interests with some protection from surface disturbance and harassment to livestock and wildlife. A seasonal ORV closure for big game winter range is necessary to protect the deer and elk habitat in the Raymond Mountain WSA. Closures for Raymond Canyon and White Canyon would protect recreation, range, and watershed values from ORV degradation.
Kemmerer W-1.1	Identify, study, and manage fragile watershed areas in order to improve and/or stabilize watershed conditions.	A complete identification of fragile areas in Raymond Mountain is necessary for better and consistent soil and water management. Areas along drainage bottoms with soil stability problems especially need to be studied and restrictions applied when necessary to reduce watershed damage.
Kemmerer W-2.4	Restrict road and pipeline construction crossing of ephemeral and perennial streams until spring runoff is completed and base flows are established.	Restricting construction of roads and pipelines during spring runoff will reduce the potential for channel damage and reduce sediment loads in the streams.
Kemmerer WLA-1.1	Designate a portion of the Thomas Fork drainage as an Area of Critical Environmental Concern (ACEC), with emphasis placed on maintenance and improvement of aquatic habitat. Special management conditions of the ACEC necessary to accomplish the desired objective are: 1. All leases will be reviewed on a case-by-case basis as they come up for renewal, to determine if there will be occupancy stipulations or special stipulations to protect the resource. 2. Limit ORV activity per recommendation RM-2.2. 3. Restrict other activities so they do not significantly impact aquatic resources.	One of the foremost threats to aquatic habitat and the Bonneville or Bear River cutthroat trout is future oil and gas development in the Thomas Fork drainage. Road and drill site construction within the watershed would lead to increased siltation, physical damage to streams, and possible contamination from chemical and oil spills. Any or all of these would result in subsequent degradation of the aquatic resource. Uncontrolled grazing and ORV use could also cause the same impacts. Maintaining the integrity of the watershed is critical to the future long-term survival of this trout species. The ACEC management plan would also protect other key values such as big game wildlife, watershed, some recreation values, and some range values.
Kemmerer WLA-1.2	Improve resident trout habitat in the Thomas Fork drainage by continuing the implementation of the Thomas Fork Aquatic Habitat Management Plan (AHMP).	Continued implementation of the Thomas Fork AHMP is essential to the continued survival of this trout species in the Thomas Fork drainage.
Kemmerer R-1.5	Surface disturbing activities in Raymond Canyon, White Canyon, Huff Lake, and the slopes of Sublette Range will be reviewed by a multi-disciplinary team to ensure that resource values are protected and that proper mitigating measures and stipulations are applied to the authorizations.	Raymond Canyon, White Canyon, and Huff Lake provide recreationists with a diversity of scenery and recreational opportunities such as sightseeing, hunting, fishing, and hiking. Any activity disturbing the natural character of the landscape will reduce the quality of a recreational experience. Sublette Range is a prominent ridge in the WSA and can be seen for miles. It provides a natural landmark, and if scarred by development activity would be an eyesore, causing irretrievable damage to the natural character of the land.
Kemmerer R-3.4	Close the entire Raymond Mountain WSA to all exploration and seismic activity from October 1 to November 1 inclusive.	The WSA is used extensively for the hunting of deer, elk, and moose. Exploration activity during this time has been extremely disturbing to the wildlife and has caused confrontations between hunters and the oil and gas exploration industry. More adverse public comments have been received on seismic activity prior to or during hunting season than any other issue in the Kemmerer Resource Area.

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exception: Raymond Canyon, White Canyon, and two two-track trails off of IGO Speedway into Raymond Canyon would be closed rather than limited.

5. During severe climatic conditions, the crucial elk and deer winter range in the ACEC will be closed to motor vehicles. The usual season of closure under such conditions is December 1 to May 15. Yearly coordination meetings will be held with the Wyoming Game and Fish Department to determine if conditions warrant closure.
6. Some vegetation manipulation will be allowed to improve forage for grazing animals. The MFP management objective is to increase total available forage production on the federal range by approximately 5,000 AUMs by the year 2000, and in the short term, to maintain production at the adjudicated carrying capacity. Conversion of use from sheep to cattle or vice versa may also be considered under this management if range surveys and range suitability support the conversion.

The area outside of the ACEC would be managed under multiple-use criteria applicable to the remainder of the Pioneer Trails Planning Unit.

The alternative to the proposed action is to manage the Raymond Mountain WSA as wilderness. The implications of wilderness management are summarized in Table D-1 of the

District-wide Analysis. If managed as wilderness, many of the activities allowed under MFP management would be precluded because they would impair the natural wilderness values of the area. However, constraints on wilderness management of this WSA would make the activities allowed under wilderness or nonwilderness alternatives, as well as the impacts, very similar. Pre-FLPMA oil and gas leases cover 96 percent of the WSA, presenting a constraint to wilderness management.

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values in the Raymond Mountain WSA. Other alternatives, such as reduced area for wilderness or elimination of ACEC management for the area, were not considered realistic in light of public comment, or as responsible resource management under the Federal Land Policy and Management Act of 1976.

Interrelationship With Forest Service Planning

The nearby Bridger-Teton National Forest lands were considered for wilderness designation in the RARE II studies of 1977. Many of these lands have similar wilderness and supplemental values as the Raymond Mountain WSA. None of the nearby National Forest lands were recommended for wilderness designation by the Forest Service and are presently managed for multiple use.

THE NEW YORK PUBLIC LIBRARY

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CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Raymond Mountain WSA is typical of a mountainous region. Temperatures above 90 F. occur only two to five days per year during the summer. Temperatures of 32 F. and below are common during the winter months and occur up to 210 days per year. Frost-free periods are between 60 and 90 days annually.

The area receives approximately 14 inches of annual precipitation. Late spring storms, early summer thunderstorms, and winter snowstorms account for most of the annual precipitation. The average annual snowfall in the area is 100 inches.

The closest weather station is located in Border, Wyoming. The predominant wind direction is from the southwest, and the wind blows more than 50 percent of the time from this direction. For a more general climate overview see District-wide Analysis, Chapter 2, Climate.

AIR QUALITY

Based on the total suspended particulate (TSP) measurements from the high volume sampler located in Grover (the closest air monitoring station to the WSA), the air quality in the area is good. The 1975-1977 average annual geometric mean for the area of 40 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) compares favorably to the Wyoming ambient air quality of 60 $\mu\text{g}/\text{m}^3$. The 1978 TSP was much better at 23 $\mu\text{g}/\text{m}^3$. No measurements of the other criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) have been made near the area, but these are assumed to be very low based on the nature of the existing sources.

Visibility measurements made in Rock Springs indicate a majority of observations (67 percent) were greater than 40 miles. Based on these data, the visibility in the WSA is probably very good and would decrease only during periods of fog, high wind, or precipitation.

Based on stability measurements (see Glossary) from Rock Springs, there is a 50 percent occur-

rence of neutral conditions, a 30 percent occurrence of stable conditions, and a 20 percent occurrence of unstable conditions in the area. See the District-wide Analysis, Chapter 2, Air Quality, for further information.

The major pollutant sources near the WSA are the lumber mill and cheese factory in Afton, Wyoming; the Hogback oil and gas field (35 miles east of the WSA); and the Sohio drilling rig inside the WSA.

TOPOGRAPHY

The Raymond Mountain WSA is located in the Sublette Mountain Range. Elevation ranges between 6,250 feet in the drainage bottoms to the highest point of Sublette Mountain at 9,313 feet. For the most part, the area is characterized by steep, rough mountains and hills in the north, and rounder, less severe hills in the south. Rock outcrops are mostly restricted to the steep sides of Raymond, Groo, and White canyons. Raymond Creek flows west into the Bear River while Huff Creek flows north into Coal Creek. Most other streams flow south. Huff Lake is the only large body of standing water in the WSA. Nearly 50 percent of the terrain in the WSA has slopes exceeding 80 to 90 percent.

GEOLOGY

The geology, stratigraphy, and mineral assessment of this WSA is described in the 1981 mineral report on the Raymond Mountain WSA (BLM 1981f) which is available for review in the Kemmerer Resource Area Office. Because this WSA is within the Overthrust Belt, which has received considerable national attention for its oil and gas potential, much of that report is presented here.

The WSA is within the Thrust Belt geologic province of western Wyoming, which is part of a zone of intense deformation, commonly known as the Overthrust Belt, extending from Canada through Montana, Idaho, Wyoming, Utah, and possibly south to Arizona and Mexico.

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Winter peaks in Raymond Mountain WSA.

Paleozoic and Mesozoic sediments, mainly marine, were involved in an episode of folding and thrusting from late Jurassic through, possibly, Eocene time. Superimposed on the thrusts were normal faults which developed from Eocene to the present. Six major thrust systems resulted (Powers 1977). Thrust belts and oil and gas fields as they exist in 1981 are shown on Map RM-2.

The main features are the Sublette Anticline, the axis of which runs along the west edge of the WSA, the Crawford Thrust which intersects the surface two miles east of the WSA, and various synclinal and anticlinal structures in between, all of which trend in a north-south direction. High-angle faults occur in some areas, such as along Mill Creek.

The west-dipping Crawford Thrust has a stratigraphic throw of from 18,000 to 22,000 feet, an average dip of 40° and a lateral displacement of at least five miles (Rubey, et al. 1975).

Mineral Resources

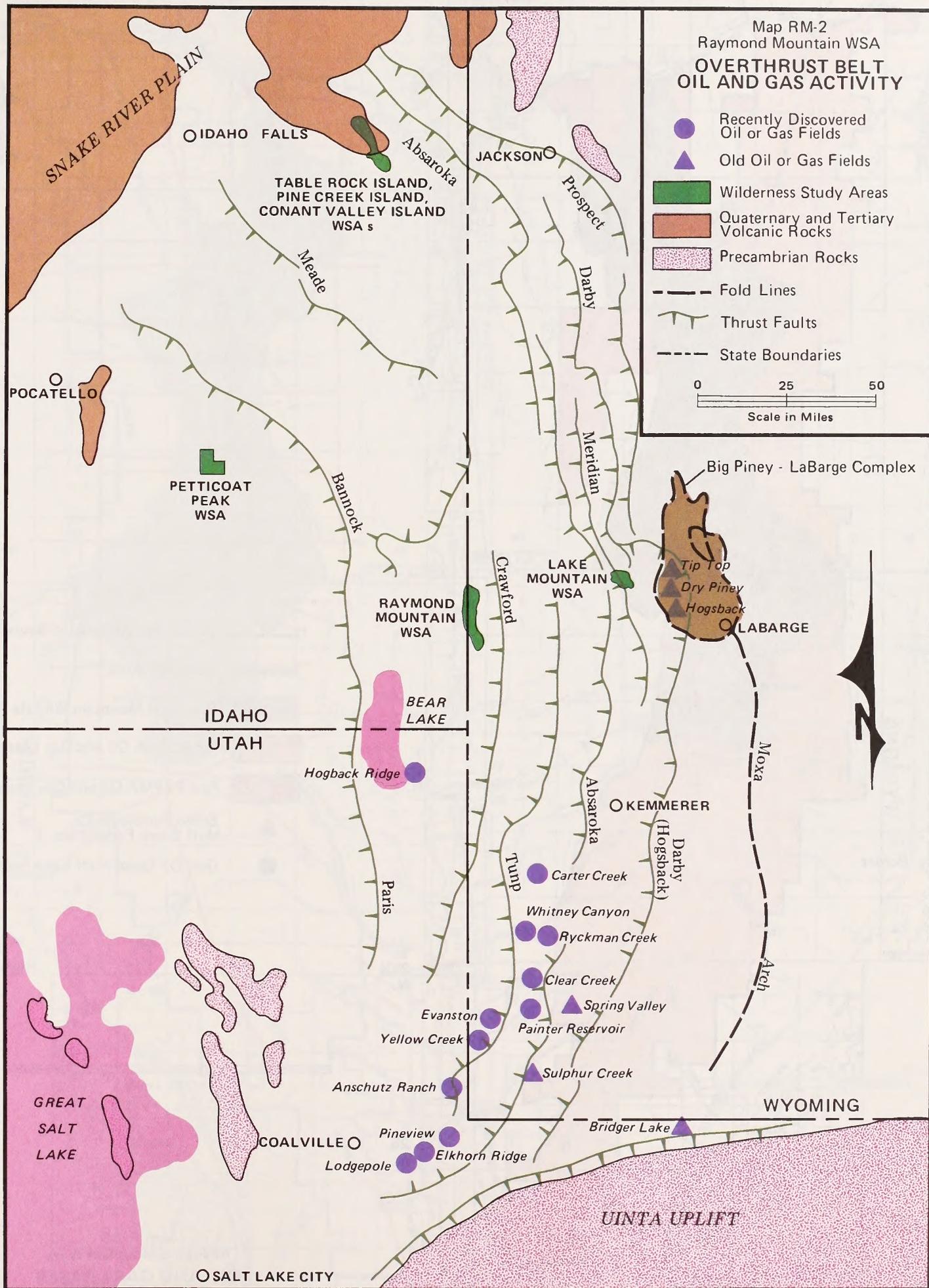
Oil and gas in the Raymond Mountain WSA has a low to moderate development potential. Oil company data indicates the presence of a major buried anticlinal structure within the WSA. The entire Raymond Mountain WSA has been leased for oil and gas with the exception of less than 10 acres

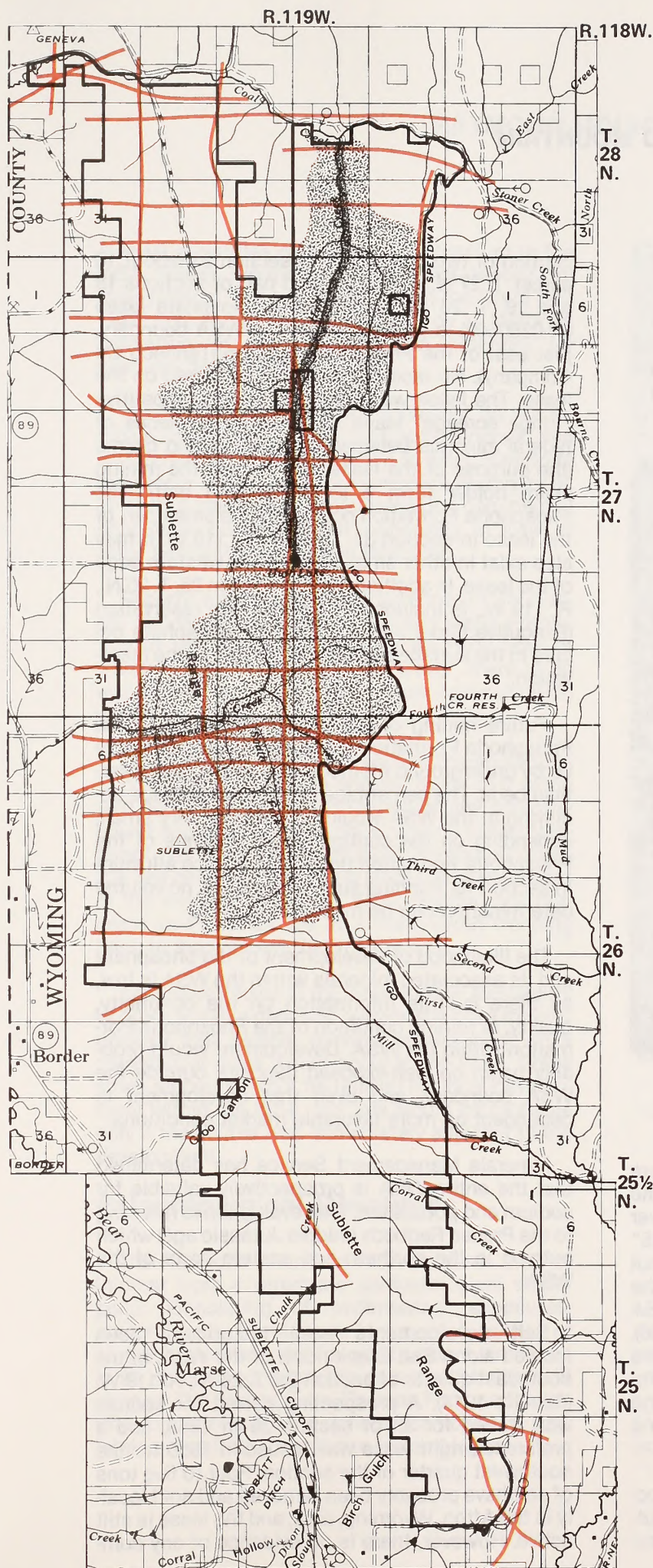
located in section 6, T. 26 N., R. 119 W. Approximately 96 percent of the WSA is covered by pre-FLPMA leases which have valid existing rights (see Map RM-3). The remaining area (1,260 acres) is post-FLPMA leased.

In 1978 Gulf Oil Corporation drilled a deep (16,061 feet) test well (Huff Lake Federal No. 1) within the WSA (section 2, T. 27, R. 119 W.), which intercepted the east flank of the anticline, however, this well proved to be dry. The nearest producing field (Hogback Ridge) is located about 35 miles southwest of the WSA, in Utah. At the present time (1982) the Sohio Petroleum Company is drilling an exploratory well (Huff Creek Federal No. 1) within the WSA in section 9, T. 27 N., R. 119 W. (see Map RM-3).

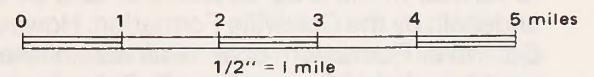
Interest in the oil and gas potential of the WSA as expressed by the present lease holders, ranges from general statements about the hydrocarbon potential to detailed structural cross sections and surface maps showing prospects of interest. Geophysical exploration lines have crossed the WSA since 1975 (see Map RM-4). Minerals Management Service rates the entire WSA as prospectively valuable for oil and gas.

Minerals Management Service has referred to part of the Raymond Mountain WSA as prospectively valuable for coal. The land sections listed as





- Wilderness Study Area Boundary
- ▨ Excluded Area
- ▨ Raymond Mountain Wildlife ACEC
- Geophysical Lines (Fiscal Year 1976 - Present)



Map RM-4
Raymond Mountain WSA
GEOPHYSICAL EXPLORATION LINES

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Typical vertical Mesozoic rock formation in Raymond Creek.

prospectively valuable that are within the WSA are sections 26, 27, 34, and 35, T. 28 N., R. 119 W. The coal is in the Cokeville Formation (lower Cretaceous age), which dips to the east from 45° to vertical in the area. Sections 27 and 34 are not underlain by the Cokeville Formation. However, the Cokeville Formation coal reserves in the WSA would probably be very small (Teknekron 1980). This fact, plus availability of much more extensive and accessible coal in other parts of Wyoming, including the Kemmerer area 30 miles to the southeast, makes the Raymond Mountain WSA a low potential area for future coal development.

The Phosphoria Formation of Permian age occurs along the western edge of the WSA. The outcrop lies outside the WSA boundary, with the ex-

ception of two areas: part of section 31 (about 10 acres), T. 27 N., R. 119 W., and part of sections 18 and 19, T. 26 N., R. 119 W. A phosphate lease (W-0280560) is located inside the WSA boundary, just east of the Phosphoria outcrop (Tenneco Oil Company). No recent activity has occurred on the lease. The lease was issued as a noncompetitive "fringe acreage" lease to fill in small pieces of federal minerals between patented mining claims (the purpose of the lease was to help the mining claim holder form a logical mining unit). The Phosphoria Formation occurs on one small part of the lease in section 31, T. 27 N., R. 119 W. It may also exist in other small parts of the western edge of the lease. In addition, part of section 26, T. 25 N., R. 119 W., is included in a phosphate reservation (Executive Order July 2, 1910). No phosphate occurs in the surface geology of this part of the reservation.

Future mining of the phosphate found in the Phosphoria Formation in the WSA would probably be by underground methods, due to the nearly vertical beds. The percentage of the total tonnage occurring in the WSA would probably be very small, depending on the continuity and analysis of the Phosphoria Formation under the surface alluvium in section 18. Pending such an analysis, no volume determination can be made in the WSA.

The likelihood of development of the phosphate and its associated minerals within the WSA is low, as there is little information on the continuity, quality, or mining condition of the Phosphoria Formation within the WSA. Development would probably begin on well-exposed deposits outside the WSA boundary, and even that development is dependent on more favorable market conditions.

Minerals Management Service has determined that the entire WSA is prospectively valuable for sodium and potassium. This evaluation is referring to the Preuss Redbeds (middle Jurassic age) which outcrop in the northern and eastern parts of the WSA.

Salt developments have historically been located along Salt Creek north of the WSA, in the southeast quarter of section 26, T. 29 N., R. 119 W. (Schultz 1914). A prospecting permit for sodium was issued for all of section 26 in 1958, and a preference right lease was issued in 1960 for the southwest quarter of the section. Four to five tons of salt have probably been removed and sold locally in the Afton, Wyoming, area; and the lease is still active. However, there is no evidence of any com-

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mercial quantities of sodium or potassium in the WSA. Future prospecting may reveal deposits of local interest, but competition from the Great Salt Lake companies would probably be a factor in marketing of any deposit. The potential for resource development is low.

The sedimentary formations present do not indicate much potential for locatable minerals, and no interest in the area is known to exist. Bentonite may occur in the Cokeville Formation (Rubey, et al. 1976), but there are no indications of a commercial deposit or public interest, especially in view of other bentonite deposits in Wyoming.

Reports exist of copper occurrences in the Nugget Sandstone of Jurassic age and Wells Formation of Permian age (Rubey, et al. 1975) both of which outcrop in the WSA. However, there is no evidence of any significant copper mineralization within the WSA.

Within the WSA there are several accumulations of colluvium and terrace gravels, much of it along Salt and Huff creeks. No testing of any potential gravel sources has been done, and no industry interest has been shown. Nugget Formation quartzite has been quarried along Rock Creek southeast of the WSA (Rubey, et al. 1975). Nugget rock outcrops in the WSA are in a north-south trending band in the western third of the area.

Access problems in the WSA and the availability of other suitable deposits outside the WSA make it unlikely that salable mineral development on a commercial scale would occur in the WSA. Some small amounts might be utilized for local development within the WSA, but this would be probable only if the source was immediately adjacent to the development.

Paleontological Resources

The Raymond Mountain WSA contains little of interest from a vertebrate paleontological standpoint. Consisting of sedimentary exposures, predominantly Cretaceous in age, no localities of significance have been found at present, and there is no compelling reason to assume that this will change. The Smiths Fork, Thomas Fork, and Cokeville formations offer a remote possibility of containing significant vertebrate assemblages.

SOILS

The Soil Conservation Service has classified the parent material of the WSA as sedimentary beds of limestone, siltstone, sandstone, and shale. Outcroppings of these beds are common. The resultant soils are deep, well-drained, and slow to moderately permeable. The medium to fine textured soils are on steep and very steep slopes over sedimentary rocks.

The entire WSA is classified in the slight erosion condition class, with the exception of a small portion in the southern Sublette Mountain Range classified as moderate (see Table RM-2). This area, approximately 624 acres, could deteriorate into the critical class if present management practices continue. The portions of the WSA classified as slight are projected to deteriorate to moderate under present management.

Table RM-2

EROSION CONDITION CLASS

<u>Erosion Condition</u>	<u>Acres In WSA</u>	<u>Percent of Total</u>
Slight	33,832	98
Moderate	624	2
Total	34,456 ^{1/}	100

^{1/} This figure includes 1,320 acres of state land and 200 acres of private land.

The soil associations are shallow, lithic, and loamy in most of the WSA, and fine, loamy, and poorly drained in the southwestern portion. The great group associations are cryoboralfs, cryoborolls, rock outcrop association in the north and eastern portions of the WSA and calciorthids, ustifluvents association in the western portions.

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WATER RESOURCES

In 1980 a level II Water Quality Reconnaissance Survey was conducted on three streams in the Thomas Fork drainage (Upper Huff Creek, Lower Huff Creek, and Coal Creek) and on one stream in the Raymond Mountain drainage (south fork of Raymond Creek). Average annual sediment yield from the four streams monitored in 1980-1981 was 0.25 tons per acre foot of stream water. Results of the survey are available for review in the Kemmerer Resource Area Office. Table RM-3 lists the major drainages in the WSA. Little potential exists for flood damage along perennial waters in the Raymond Mountain WSA.

Table RM-3

DRAINAGES

<u>Drainage</u>	<u>Acres in WSA</u>	<u>1/ Percent of Total Watershed Acreage</u>
Thomas Fork	11,397	26
Raymond Mountain	16,162	68
Smiths Fork	6,879	13

^{1/} These figures only reflect the acres of each specific drainage actually within the WSA boundaries.

There are no Geological Survey Stream Gauging Stations within the Raymond Mountain WSA. No water quality or quantity data is available to reliably assess the suitability of these waters for various uses. Few known water quality problems exist in the WSA at present. However, trend data indicates deteriorating conditions are present in some streams in the WSA, primarily Huff Creek. Without improved riparian management for Huff Creek, levels of sediment, dissolved solids, and phosphates would increase and adversely impact downstream users.

Water in the WSA is predominantly used for wildlife, livestock, and recreation. Immediate downstream water uses of the perennial streams draining from the area are primarily irrigation, livestock watering, and wildlife (see Map RM-5).

Consumptive use figures are not available. In-stream flow requirements for fisheries, recreation, and channel maintenance have not been calculated, as such requirements are not recognized as a beneficial use of water by the State of Wyoming.

Potential problems associated with the present uses within the WSA are a loss of bank vegetation and subsequent reductions in channel stability. The principle causes of erosion are concentrated livestock and wildlife use in bottom lands, due to steep terrain. Increasing pressure from recreationists and off-road vehicle use also impacts stabilized vegetation and leads to increased erosion rates.

VEGETATION

The vegetation within the Raymond Mountain WSA is very diverse, ranging from sagebrush to coniferous forest. Table RM-4 lists the vegetation types and the approximate acres of each type. The steep ridges on the east side of the WSA are dominated by the sagebrush-grass vegetation type (Map RM-6). Other areas dominated by this type include dry sites and lower elevation sites on the west side of the area. Major grass species within this type include bluebunch wheatgrass, kingspike fescue, Idaho fescue, needle-and-thread, plus various species of bluegrass. Forbs common to this vegetation type include pussytoes, buckwheat, phlox, balsam root, and Indian paintbrush. Those shrub species common to this vegetation type include big sagebrush, three-tipped sage, bitterbrush, rabbitbrush, and snowberry.

The major broadleaf tree type is the aspen. The aspen subtype has an understory of grasses and sedges, similar to the sagebrush-grass type, and is found on slopes where snow accumulation has created adequate moisture. Small aspen stands are often found in association with springs.

The meadow and riparian vegetation type in the WSA is composed of three subtypes including willow, wet meadow, and dry meadow. The willow subtype is found along Raymond and Mill creeks, but the total acreage is very limited. The main understory species include bluegrass and sedge species. The wet meadow subtype is similar to the willow subtype without the willows. The Huff Creek bottom is a wet meadow which at one time contained willows. The dry meadow subtype is very limited in distribution and is confined to intermediate zones between wet meadow and big

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Table RM-4
VEGETATION TYPES

<u>Type</u>	<u>Acres</u>
Conifer	
Douglas fir	1,500
Engelmann spruce-subalpine fir	1,200
Broadleaf Tree	
aspen	1,700
Meadow	
wet meadow	200
dry meadow	40
willow	100
Sagebrush-Grass	
big sagebrush	24,596
Mountain Shrub	
curlleaf mountain mahogany	5,000
other	120
Total Acres	34,456 ^{1/}

^{1/} This figure includes 1,320 acres of state land and 200 acres of private land.

sagebrush subtypes. The dry meadow subtype is usually characterized by a dense stand of grasses and sedges.

The WSA's mountain shrub type is typified by curlleaf mountain mahogany stands on drier slopes at higher elevations. The understory of the stands varies from bare soil to sagebrush, Idaho fescue, needle-and-thread, kingspike fescue, bluebunch wheatgrass, pussytoes, phlox, water leaf, and other forbs.

The conifer vegetation type in the WSA is characterized by two subtypes: the Douglas fir and Engelmann spruce-subalpine fir. The Douglas fir

subtype is found at higher elevations on north facing slopes. This subtype is primarily confined to the northern half of the WSA. The Engelmann spruce-subalpine fir subtype is limited to the highest elevations and is primarily located in the center of the area around Sublette Mountain and the main ridges south of this point. The understory of the conifer type is very limited in most cases, but bluegrass species and Idaho fescue can be found, as well as a few forbs.

No concentrations of poisonous plants have been identified in the WSA. Isolated poisonous plants found in the WSA include larkspur and lupine, but no problems have been noted from these plants.

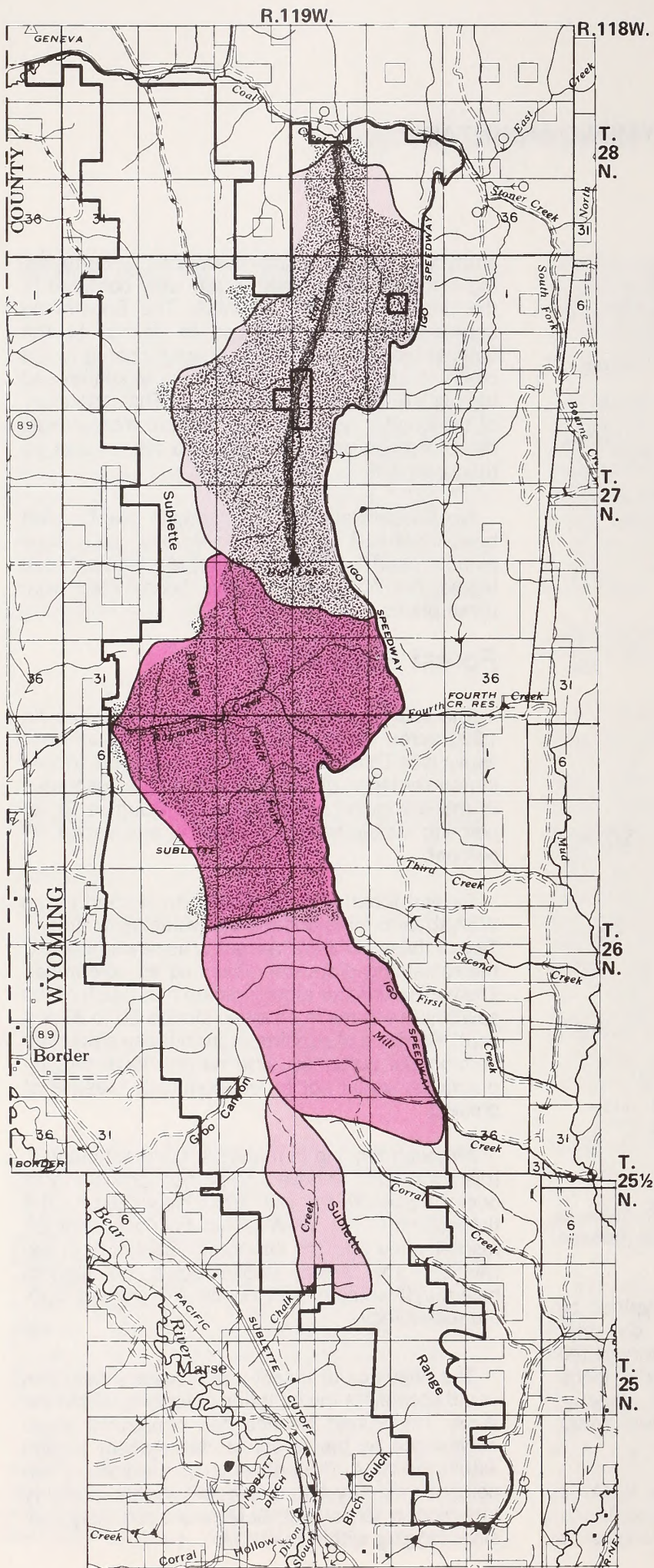
Forest Resources

The WSA contains 1,500 acres of Douglas fir, 1,200 acres of subalpine fir, and 1,700 acres of aspen (see Table RM-4). This represents the following percentages of the available timber resources in the Kemmerer Resource Area: Douglas fir, 36 percent; subalpine fir, 23 percent; and aspen, 31 percent.

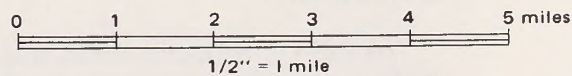
Several forestry plots have been studied in the WSA to determine commercial volumes of timber. Two of these plots are classified as sawtimber and the remaining plots are classified as poletimber. The two sawtimber plots indicate that much of the sawtimber volume is on steep slopes (80 to 90 percent). Retrieval of sawtimber from these slopes for commercial purposes, with current local logging practices, would not be economically feasible at present.

Although logging in the WSA is not anticipated, it is considered to have a 10 percent probability of occurring before the year 2000. Harvesting of the timber within the WSA would be dependent on market price and the economic feasibility of extraction. The steep slopes could be logged, however, it would be very costly with present logging technology.

The presence of insect and disease infestation could accelerate the initiation of logging within the WSA. The Forest Service has conducted aerial surveillance of the forest lands adjacent to and within the WSA. Their observations indicate a five percent mortality rate at present. If this mortality rate rose to 15 percent, BLM would seriously consider logging within the WSA.



- Wilderness Study Area Boundary
- Excluded Area
- Raymond Mountain Wildlife ACEC
- Raymond Creek
- Mill Creek
- Chalk Creek
- Huff Creek



Map RM-5
Raymond Mountain WSA
MAJOR WATERSHEDS

RAYMOND MOUNTAIN

Fire Management

The fire management plan being developed for the Kemmerer Resource Area advocates a limited suppression policy. Limited suppression means that fires in many areas would be allowed to burn if conditions are within prescribed limits, e.g., wind speed, percent of humidity. However, in all cases, fire that threatened human life or property would be suppressed.

WILDLIFE

The Raymond Mountain WSA provides excellent wildlife habitat for a variety of wildlife species. However, only those species commonly occurring in the WSA will be addressed in this discussion. Complete species lists are available in the Pioneer Trails Unit Resource Analysis (URA) and the Raymond Mountain URA Supplement which are available for review in the Kemmerer Resource Area Office.

Terrestrial

The Raymond Mountain WSA serves as habitat for several big game species including mule deer, elk, and moose (see Maps RM-7-9). Elk utilize the WSA as a winter range and approximately half of the WSA can be classified as elk crucial winter range. This habitat is especially critical during severe weather conditions, when the elk are forced to lower elevations, due to snow depth. During normal winter conditions, elk use extends over the entire WSA. Aerial surveys made during the mild winter of 1980-1981 determined that primary use was centered within a two-mile radius of Raymond Creek's north and south fork confluence. Approximately 150 elk were counted in the WSA during these surveys.

Mule deer use the majority of the WSA as summer range. Only a small portion of the WSA falls within the deer crucial winter range. A small portion of the WSA is classified as winter/yearlong habitat and is normally used during mild winters and as spring-fall range.

Moose utilize the WSA on a yearlong basis, although no moose crucial winter range falls within the WSA. Aerial surveys made during the winter of 1980-1981 counted nearly two-dozen moose using the area.

Numerous small and large bird species inhabit the WSA including sandhill cranes, and ruffed and blue grouse. Waterfowl use is limited to the beaver pond complexes found on Raymond and Mill creeks and Huff Lake. Species include mallard, pintail, shoveler, American widgeon, gadwall, blue-winged and cinnamon teal. Raptor species inhabiting the area include red-tailed hawk, ferruginous hawk, golden eagle, goshawk, prairie falcon, sharp-shinned hawk, and Cooper's hawk.

Numerous species of small mammals (game, furbearing, and nongame), amphibians, reptiles, and invertebrates occur within the WSA.

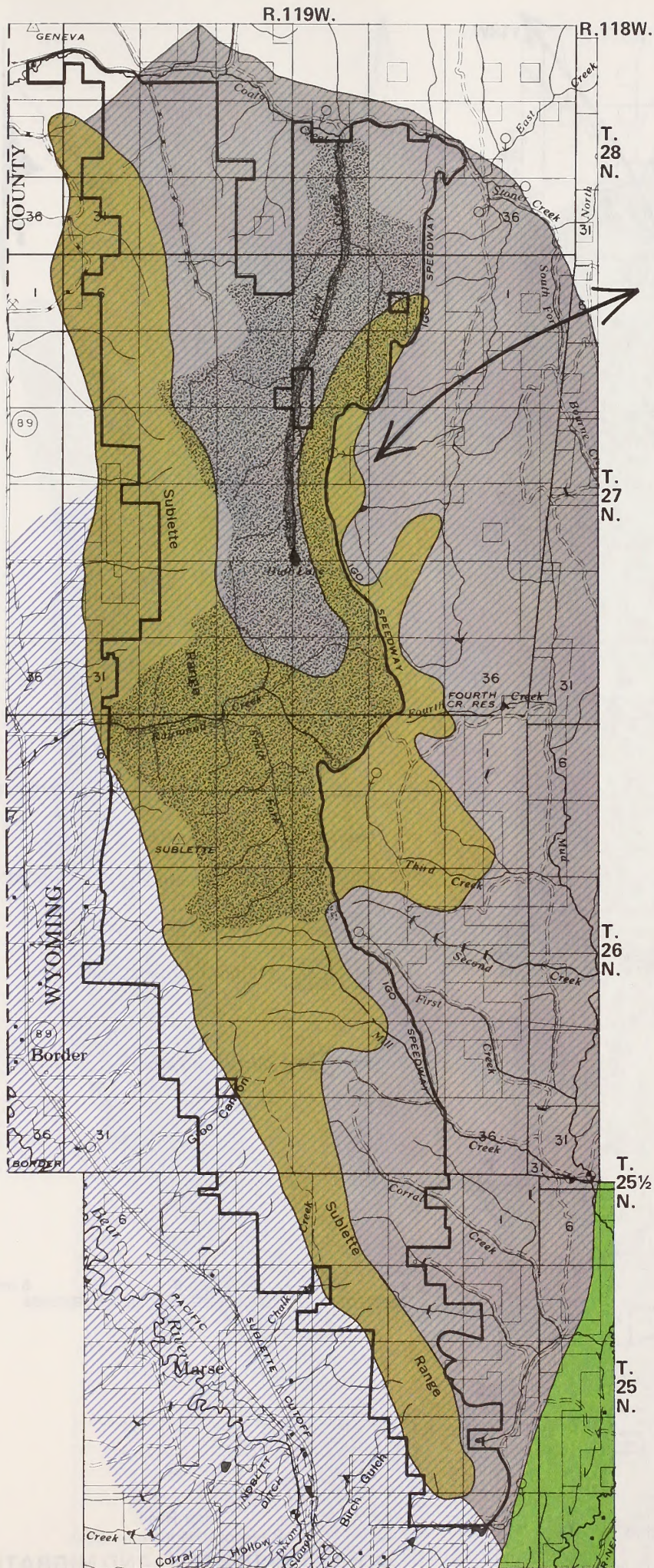
Aquatic

Huff, Raymond, Coal, and Thomas Fork creeks are streams within the WSA which support game fish. These creeks are dominated by populations of genetically pure Bonneville or Bear River cutthroat trout (*Salmo clarki Utah*) (Behnke 1976), a species designated as sensitive by BLM and the Fish and Wildlife Service, and rare by the Wyoming Game and Fish Department. The Fish and Wildlife Service is conducting a status review of the Bear River cutthroat trout to determine whether it should be reclassified as threatened and endangered.

Fisheries and aquatic habitat information is intensively addressed in the Thomas Fork Aquatic Habitat Plan which was implemented in 1979. A trout survival enclosure was constructed on Huff Creek to protect aquatic habitat. The WSA falls within the geographic boundaries of the habitat plan and the plan is available for review in the Kemmerer Resource Area Office.

Threatened and Endangered Species

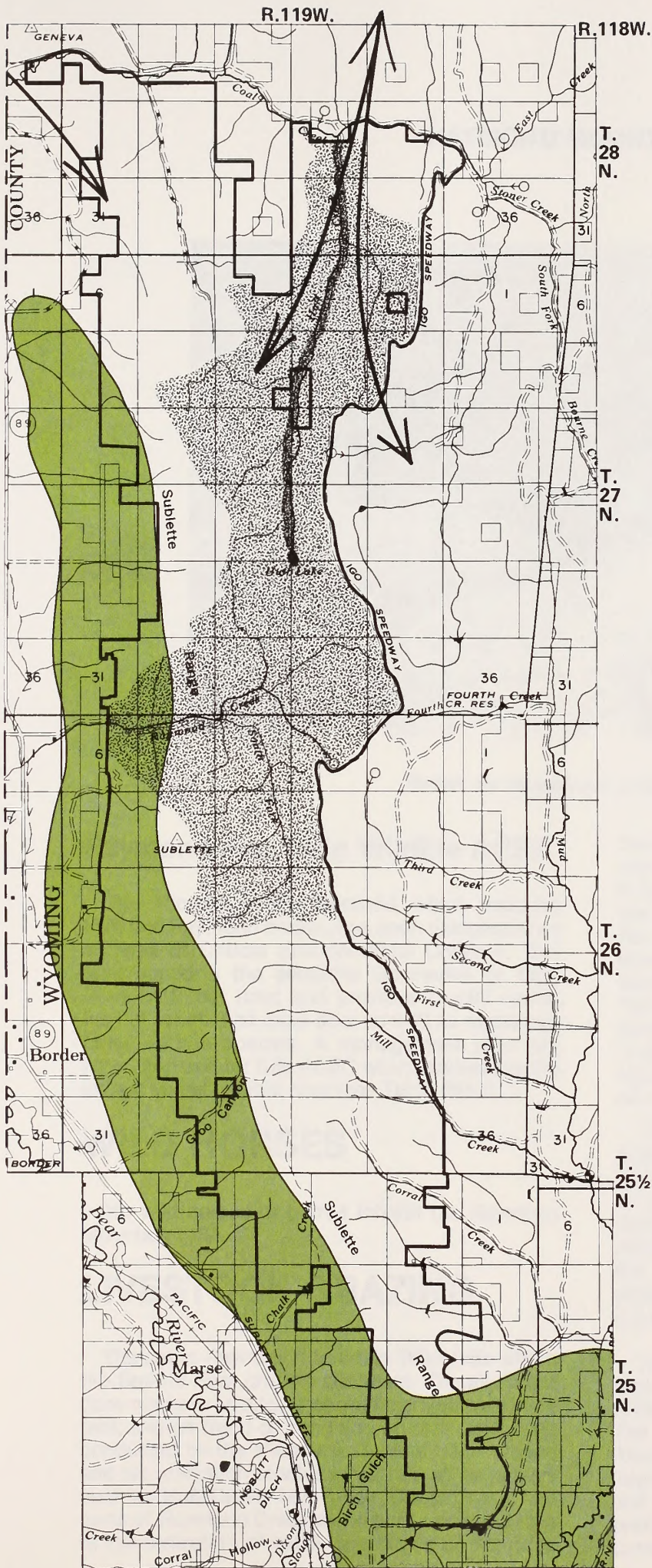
Bald eagles, peregrine falcons, and whooping cranes, officially listed by the Fish and Wildlife Service as endangered species, may occur in the WSA. Bald eagles have been observed in the WSA, however, no nesting sites are known. Most sightings have been in the winter, however, a bald eagle was observed in Raymond Canyon on June 1, 1978. Peregrine falcons have not been observed within the WSA and there are no known nesting sites within the WSA. Whooping cranes have been observed flying through the Bear River Valley (southwest of the WSA) during the spring and fall migration.

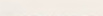
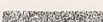


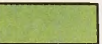


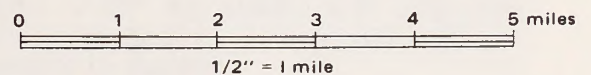
- Wilderness Study Area Boundary
- Excluded Area
- Raymond Mountain Wildlife ACEC
- Main Occupation Area
- ➔ Migration Patterns
- Summer Occupation
- ▨ Winter Occupation
- Winter/Yearlong Occupation

0 1 2 3 4 5 miles
1/2" = 1 mile

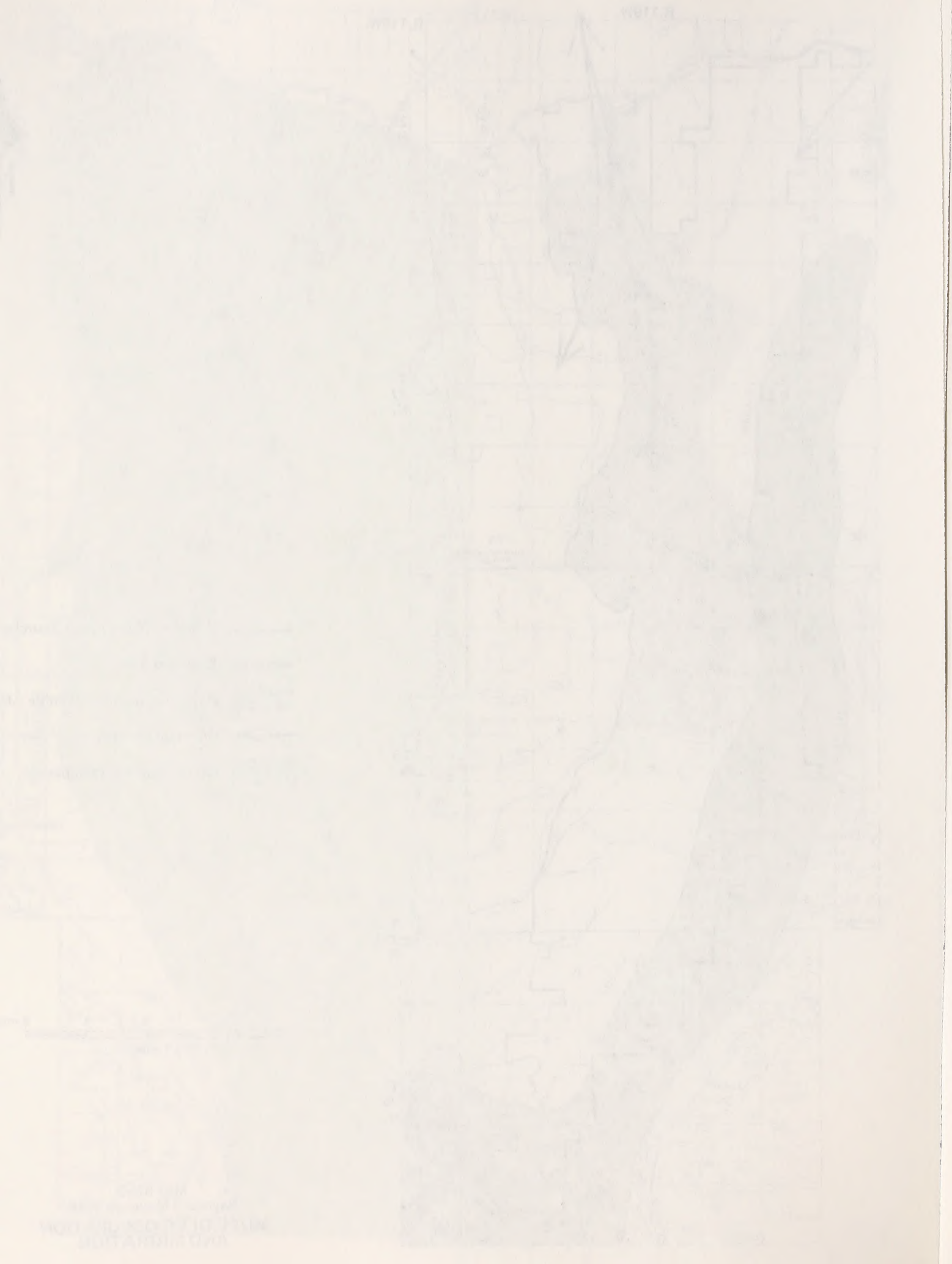
Map RM-7
Raymond Mountain WSA
ELK OCCUPATION AND MIGRATION



-  Wilderness Study Area Boundary
-  Excluded Area
-  Raymond Mountain Wildlife ACEC
-  Migration Patterns
-  Winter/Yearlong Occupation



Map RM-9
Raymond Mountain WSA
**MULE DEER OCCUPATION
AND MIGRATION**



RAYMOND MOUNTAIN



Washed out two-track trail on Raymond Creek.

Raymond Mountain Wildlife ACEC

The Thomas Fork watershed, which includes Huff and Raymond creeks, has been designated as an Area of Critical Environmental Concern. This area supports the sensitive Bonneville or Bear River cutthroat trout and provides crucial winter habitat for elk and mule deer as well as numerous other wildlife species. A management plan has been prepared for this ACEC which addresses the unique values of this area (see Table RM-1).

WILD HORSES

No wild horses or burros inhabit the Raymond Mountain WSA.

LIVESTOCK GRAZING

The entire Raymond Mountain WSA falls within the Smiths Fork grazing allotment. The allotment does not have an allotment management plan in effect, and no trend or condition studies have been conducted on the allotment. General observations and old utilization studies indicate that the valleys such as Huff Creek, Mill Creek, Corral Creek, and parts of Raymond Creek are in poor condition, due to concentration of cattle use. Some of the ridge

tops used by elk as crucial winter habitat are in poor condition. The major portion of the allotment is in fair condition, with the ungrazed portions of the west side in good condition. The range condition within the WSA is in an apparent upward trend, due to improved range supervision, better livestock distribution, and reduced sheep trailing. The trout survival exclosure on Huff Creek has improved the range condition within the WSA. Some of the livestock distribution problems can be attributed to the conversion of sheep use to cattle over the past 15 years.

The WSA comprises 51 percent of the federal acreage in the Smiths Fork Allotment (64,725 acres). However, the WSA has a carrying capacity of only 3,631 AUMs or only 25 percent of the federal AUMs available (14,627) in the Smiths Fork Allotment. This significant difference results from the WSA's rough topography and unsuitable vegetation types, resulting in most of the WSA being unsuitable for grazing.

Thirty grazing permittees are licensed to common use of the Smiths Fork Allotment; eight permittees run sheep and the remaining 22 run cattle. The authorized use for the entire Smiths Fork Allotment is as follows: cattle—3,065, May 16 to September 30; sheep—9,300, May 5 to June 30, and 15,830, September 15 to November 1. Cattle prefer to graze the gentle slopes and valley bottoms; sheep usually graze the steeper, drier slopes

RAYMOND MOUNTAIN

and water in the valley bottoms. The carrying capacity for the WSA ranges from 45.7 to 5.2 acres per AUM.

Existing range improvements in the WSA include seven sagebrush spray projects, one riparian (see Glossary) exclosure, and a drift fence (see Table RM-5). All improvements in the WSA are range oriented, with the exception of the exclosure on Huff Creek. The exclosure was designed to protect and improve riparian and fisheries habitat. The sagebrush sprays were conducted in 1968–1970 to increase forage production; these areas have since been reinvaded by sagebrush.

The only conflicts between range users and recreationists occur when the livestock are trailed out of the WSA in the fall. Hundreds of cattle trail home via Raymond Canyon at this time, and often fill the canyon from wall to wall.

WILDERNESS INCLUDING RECREATION

Wilderness Values

The BLM inventoried the Raymond Mountain area and all contiguous public lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory, the Bureau determined that the Raymond Mountain WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Table RM-5

RANGE IMPROVEMENTS

T. 28 N., R. 119 W.

sections 26, 27, 29, 32, 33, 34, 35	sagebrush spray
sections 25, 35	sagebrush spray
section 27	exclosure
section 34	exclosure

T. 27 N., R. 119 W.

section 3	exclosure
sections 2, 3, 9, 10, 11, 16, 17, 21, 22	sagebrush spray
sections 34, 35	sagebrush spray

T. 26 N., R. 119 W.

sections 23, 26, 34, 35	sagebrush spray
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T. 25 N., R. 119 W.

sections 2, 11, 13, 14, 24	sagebrush spray
sections 24, 25	sagebrush spray
section 10	drift fence

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Size

The WSA contains 32,936 contiguous acres of public land, 1,320 acres of state land, and 200 acres of private land. A road (six miles long) penetrates the northern boundary and terminates at Huff Lake. The road is excluded or cherry-stemmed from the WSA (see Map RM-1).

Naturalness

The WSA contains several imprints of man including a communication site with access road, several small phosphate exploration sites, an abandoned well site, a road which penetrates the WSA along Huff Creek to some private land, several two-track trails, and evidence of livestock trailing. A recently located (1982) Sohio drilling rig occupies a small site in the northern portion of the WSA. These intrusions, when viewed in the context of the entire WSA, are substantially unnoticeable.



Looking west from IGO Speedway.

Outstanding Opportunities

Because of the steepness of the terrain and the accompanying vegetation, an outstanding opportunity for solitude exists throughout the WSA. There are many secluded spots which would permit undisturbed recreation. This WSA is well suited to hiking, backpacking, fishing, hunting, horseback riding, climbing, cross-country skiing, snowshoeing, nature photography, bird-watching, and sightseeing. The opportunity for these activities is considered outstanding in relation to other areas of the region.

Supplemental Values

The area has numerous supplemental values which enhance the wilderness qualities. The abundant and diverse wildlife species, the great botanical diversity, abundant species of wild flowers, unusual geologic formations, and numerous viewpoints from which outstanding scenery can be enjoyed are the primary supplemental values.

Recreation Opportunities

Specific visitor use data is not available for the Raymond Mountain WSA; however, reasonable estimates on user activities and levels of use have been made from field observations, public comments, and existing information. The WSA contributed approximately 1 percent or 1,273 of the total 134,118 visitor-days (consumptive use only—see Glossary) available in the Kemmerer Resource Area (Pioneer Trails Planning Area Analysis). The area provides recreation opportunities such as hunting and fishing, as well as nonconsumptive uses such as camping, horseback riding, hiking, and sightseeing (which are not included in the totals above). Under present MFP management, the WSA is open to off-road vehicle (ORV) use. Hunters are the primary ORV users in the WSA.

Visitors in the WSA come primarily from the nearby towns of Raymond, Geneva, and Cokeville. They participate chiefly in picnicking and fishing in the spring, summer, and fall; and hunting in the area in the fall, using the primitive, dispersed campsites. Several out-of-state hunting parties utilize the WSA, but usually in conjunction with local hunters.

The primary recreation activity in the WSA is the hunting of moose, elk, deer, and grouse. Elk and moose hunting are considered excellent, and deer and grouse hunting are considered good. The Raymond Mountain area receives 480 elk hunter-days per year, 382 deer hunter-days per year, and 11 moose hunter-days per year. Hunting in the past was conducted primarily on horseback or on foot. However, within the last ten years, the trend has changed, and hunters primarily utilize four-wheel drive vehicles. The hunters usually haul campers or trailers to the fork in Raymond Canyon or to Huff Lake. Hunting occurs throughout the WSA, including the ridges, canyons, and hillsides.

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Fishing occurs on Huff and Raymond creeks, and is considered good. These creeks receive 400 fisherman-days per year. The primary game fish is the Bonneville or Bear River cutthroat trout, which are small but plentiful.

Primitive camping occurs along Raymond Creek at existing rock fire rings. Other primitive camping areas are located west of Huff Creek and in White Canyon. They are primarily hunting campsites. No visitor facilities exist within the WSA and none are proposed.

Hiking and backpacking also occur in the area. People that participate in these activities may also engage in nature study and sightseeing. Most horseback riding occurs in Raymond Canyon, the southern pack trails, and White Canyon.

Sightseeing occurs separately as well as in conjunction with other recreational activities. Opportunities for vista views of the Bear River Valley, Smiths Fork drainage, the Tump Range, and the Salt River Range are common. The WSA has high scenic values and also provides good opportunities for geologic sightseeing.

Snowmobiling opportunity in the WSA is excellent. It occurs mainly on the existing roads, ways, and trails. Some trapping occurs in the WSA and this is closely associated with snowmobiling.

CULTURAL RESOURCES

A cultural inventory (Class III level) was conducted on approximately 1,550 acres within the Raymond Mountain WSA during August and September of 1979. No significant cultural resources, either prehistoric or historic, were located during the inventory. The overall potential of the WSA for prehistoric sites is probably quite low due to the rugged terrain. Turn of the century maps show a "house" surrounded by "ploughed land" in the southeast quarter of section 10, T. 27 N., R. 119 W., and BLM Master Title Plats indicate a few homestead entries within the WSA. This might indicate a low to moderate potential for significant historic sites.

The Oregon Trail passes southwest of the WSA. Ruts in this area cannot be discerned because U.S. Highways 30 N. and 89 were constructed over the ruts.

VISUAL RESOURCES

The Raymond Mountain WSA is characterized by steep, sagebrush-covered hills in the east; rolling sagebrush-covered hills in the south; and steep, conifer and aspen-covered mountains along the west. The conifer and aspen-covered hills display brilliant green, yellow, and red colors during the fall, and many shades of green during the summer. There are many rock outcrops and the view of Huff Lake as seen from the surrounding hilltops is outstanding.

Most of the WSA is rated Class II, under BLM's Visual Resource Management (VRM) system. (See the District-wide Analysis, Chapter 2, Visual Resources, for a detailed explanation of the VRM system.) A Class III rating has been assigned to the extreme southern and eastern fringe portions of the WSA.

NOISE

Current noise levels within the WSA are not available; anticipated noise within the WSA would include gunshots during hunting season; aircraft engine noise from occasional overflights; vehicular noises from Highway 89 and the IGO Speedway (eastern boundary of the WSA); noise associated with a drilling rig (Sohio's) within the WSA; and occasional vehicular noises from trucks or snowmobiles venturing into the WSA. Most other significant sounds would be natural in origin. Man-made noises are generally not distinguishable in Raymond Canyon.

LAND USE CONSTRAINTS

The Raymond Mountain WSA is located entirely within Lincoln County, Wyoming. This county does not exercise its zoning powers in the WSA. The towns in general proximity to the WSA include Cokeville to the south, Geneva to the west, and Af-ton to the north. Their existing plans or policies do not conflict with either a wilderness or non-wilderness designation for the WSA.

Raymond Mountain WSA contains 32,936 acres of public land, 1,320 acres of state land, and 200

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acres of private land. The surrounding ownership is primarily private on the western and southern boundaries, and public on the northern and eastern boundaries.

Adjacent land uses include farming and ranching on the western and southern boundaries; and grazing on the northern and eastern boundaries. Management from the western and southern boundaries may be difficult due to the large amounts of solid-blocked private land.

An operating communication site is located on public land within the WSA in section 6, T. 26 N., R. 119 W., near the mouth of Raymond Canyon. It is a television translator station and is used by residents of the Thomas Fork Valley, west of the WSA. The communication site right-of-way (W-0256509) was issued June 4, 1968. The site is well hidden from view, although the dirt access road to the site is visible. Access to the communication site is necessary for maintenance purposes. Less than half a mile of the access road is within the WSA boundary.

SOCIOECONOMIC CONDITIONS

Population

The WSA is located in Lincoln County which had a 1980 population of 12,177 (Census Bureau 1980). Cokeville is the closest incorporated town to the WSA, with a 1980 population of 515. Kemmerer is the largest city and major trade center for Lincoln County, with a 1980 population of 3,273. The population in Cokeville and Lincoln County has increased 17 and 41 percent, respectively, from 1970 to 1980.

Employment and Income

Total employment in Lincoln County was 5,560 in 1979, which represents a 19 percent increase over the five-year period from 1974 to 1979 (see

District-wide Analysis). No employment can be directly attributed to the Raymond Mountain WSA.

Total labor and proprietors' income in Lincoln County increased 94 percent from \$41.9 million in 1974 to \$81.4 million in 1979 (see District-wide Analysis). The Raymond Mountain WSA supplied 1,273 of the total 134,118 consumptive visitor-days utilized in the Kemmerer Resource Area in 1980 (Kemmerer Resource Area Planning Area Analysis). Recreation use of the WSA provided an estimated \$45,580 in direct expenditures in the local economy in 1980 (Kemmerer Resource Area Planning Area Analysis). Income from livestock use of Raymond Mountain WSA would be included with the farm proprietors and the farm sector of total labor and proprietors income (see District-wide Analysis). There is currently no mineral production from the Raymond Mountain WSA.

Economic Value

The existing level of economic benefits (see Appendix C) from the Raymond Mountain WSA is derived from recreation and grazing use of the WSA.

Lifestyles and Attitudes

Oil and gas exploration and its related industries, combined with previous coal mining activities have created a new and basically younger way of life in Lincoln County, particularly in the Kemmerer area. In the past a more conservative, small town atmosphere was present among the county residents. This is probably still true of the smaller, more agriculturally oriented towns of Cokeville, Geneva, and Afton. The people in these towns generally do not favor wilderness designation or oil and gas development, because of their effect on existing ranching. In Kemmerer, however, the attitude is changing due to the large influx of mineral and energy related employees. The Kemmerer town council is in favor of multiple use of public lands and opposes wilderness designation. For a general description of Wyoming resident's attitude toward wilderness, see Appendix D.

Some of the most important factors in the development of a country are the quality of its human resources and the extent of its natural resources.

The quality of human resources is determined by the level of education and training of the population. The extent of natural resources is determined by the size and location of the country.

The quality of human resources is also determined by the health and nutrition of the population. The extent of natural resources is also determined by the climate and topography of the country.

SOCIOECONOMIC CONDITIONS

Population

The population of a country is one of the most important factors in its development. A large population can provide a large labor force and a large market for goods and services. However, a large population can also be a burden on the country's resources.

Employment and Income

The level of employment and income in a country is another important factor in its development. High employment and income can lead to higher living standards and faster economic growth.

The level of employment and income is also determined by the quality of the country's human resources and the extent of its natural resources.

The quality of human resources is also determined by the health and nutrition of the population. The extent of natural resources is also determined by the climate and topography of the country.

Economic Policy

The economic policy of a country is another important factor in its development. A sound economic policy can lead to faster economic growth and higher living standards.

Infrastructure and Services

The infrastructure and services of a country are also important factors in its development. Good infrastructure and services can lead to faster economic growth and higher living standards.

The infrastructure and services of a country are also determined by the quality of its human resources and the extent of its natural resources.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumptions were used for this impact analysis.

1. Oil and gas has a low to moderate development potential in the WSA. Approximately 96 percent of the WSA is pre-FLPMA leased for oil and gas and the remaining 4 percent represents state leases. It is assumed that most lessees would attempt to determine oil and gas potential through further exploration (both geophysical and exploratory drilling). At the very least oil and gas exploration activities would continue. If sufficient reserves are discovered, development would certainly follow. It is assumed that exploration may discover a small amount of oil and gas somewhere within the WSA, but most exploration would be unsuccessful and most pre-FLPMA leases would expire.
2. The BLM mineral report on Raymond Mountain WSA states that mineral potential is rated low for those minerals other than oil and gas. Interest in these minerals is very low to non-existent, therefore it is assumed that impacts associated with other mineral development under either alternative would be negligible.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action minor adverse impacts would occur to air quality. Those impacts that would occur would be a result of oil and gas exploration, largely outside the ACEC. The im-

pacts of exploration and some other activities could be mitigated, but minor adverse impacts could still result. If major oil and gas fields are discovered, the impact to air quality would be highly adverse.

Topography

Under the proposed action minor adverse impacts would occur to topography within the WSA. This impact would result from oil and gas activities in the WSA, largely outside the ACEC.

Paleontological Resources

Under the proposed action impacts to paleontological resources would be negligible.

Soils

Under the proposed action moderately adverse impacts would occur to soils. The disturbance associated with oil and gas exploration and possible development can be expected to increase soil erosion within the WSA. Impacts would be lessened within the ACEC, due to ACEC management prescriptions.

The closure of four two-track trails (Raymond Canyon, White Canyon, and two trails off of IGO Speedway) would allow revegetation to occur, reducing soil erosion. The Kemmerer Resource Area MFP recommends manual rehabilitation of some portions of the two-track trails within the ACEC.

Construction of anticipated range improvements (e.g., pipelines, water improvements, fences, etc.) may also cause a short-term soil loss. Vegetation manipulation (through either spraying or prescribed burning) may also cause a short-term soil loss, but in the long term the soil would be stabilized.

Water Resources

Under the proposed action minor adverse impacts would occur to water resources, due to anticipated oil and gas activities. Water runoff would increase as a result to soil compaction and vegeta-

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tion loss. Construction associated with oil and gas activity would increase the sediment and nutrient load in waterways. An increase in contaminants could also occur. Closure of the two-track trail in Raymond Canyon would improve water quality, due to the absence of motor vehicles fording Raymond Creek.

Surface water quantity would not be affected under the proposed action. Water supplies for oil and gas activities would be provided through drilling of water wells or by trucking in any necessary water from outside the WSA.

Vegetation Including Forest Resources

Under the proposed action vegetation (including forest resources), when viewed purely as a natural resource, would incur moderately adverse impacts. Anticipated oil and gas activities are expected to cause some vegetation loss, due to the disturbances associated with oil and gas activities. These adverse impacts would be lessened within the ACEC. Rehabilitation would restore the vegetation in the very long term.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle and competitive native plants. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Construction of some anticipated range improvements (e.g., pipelines, water improvements, etc.) would have minor adverse impacts on vegetation. However, creation of additional water developments and salt stations would lessen the impact of cattle concentrating on the vegetation at existing salt stations and water developments. The overall effect of range improvements and improved livestock distribution would be beneficial, due to increased forage production and vigor.

Vegetation manipulation to increase forage production would cause a shift from a sagebrush dominant system to a grass dominant system. However, in the long term, the vegetation would probably revert to its former condition. Revegetation of the four closed two-track trails (Raymond Canyon, White Canyon, and two trails off of IGO Speedway) would have a beneficial impact on vegetation.

Fire Management

Fire suppression would be constrained within the ACEC because wheeled or tracked vehicles would not be allowed within the ACEC boundaries except in emergency situations.

Wildlife

Under the proposed action minor beneficial impacts would occur to wildlife. Crucial big game winter range would be maintained. Restrictions on motor vehicle use and oil and gas activities within big game range will be implemented during the critical period from December 1 to May 15. Yearlong two-track trail closures in some areas (Raymond Canyon, White Canyon, and two trails off of the IGO Speedway) would result in a short-term decrease in hunting (the primary recreation use), but hunting would probably increase in the long term, due to improved opportunities.

Vegetation manipulation would increase forage production, and if logging should occur within the WSA, the quantity and diversity of big game browse may be increased. However, in some areas, logging may have an adverse impact on big game species, particularly elk, by eliminating necessary cover.

As most of the WSA's raptor habitat is located in the ACEC, management prescriptions developed for the ACEC would protect raptors.

Under the proposed action minor adverse impacts would occur to aquatic habitat. However, the ACEC encompasses the watershed of the WSA, providing maximum protection to the Bonneville or Bear River cutthroat trout. Closure of the Raymond Canyon two-track trail would enhance aquatic habitat. Vehicles would no longer ford Raymond Creek, which would significantly reduce stream-bank erosion, siltation of the stream, and subsequent loss of spawning habitat. Habitat would continue to improve under implementation of the Thomas Fork Habitat Management Plan.

Under the proposed action no threatened or endangered species would be affected. If the Fish and Wildlife Service changed the classification of the Bonneville or Bear River cutthroat trout from sensitive to threatened and endangered, the Wyoming Game and Fish Department would probably close Huff and Raymond creeks to fishing. This would have beneficial impacts on the trout

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population, but it would adversely affect fishing opportunities in the WSA.

If oil and gas exploration and development occurred within the WSA, the impacts to wildlife would be so adverse, as to offset any beneficial impacts mentioned previously.

Livestock Grazing

Under the proposed action minor beneficial impacts would occur to livestock grazing. Several range improvements would be developed or implemented (vegetation manipulation, pipelines, water developments, etc.) resulting in an increase in forage production and creating better opportunities for livestock management.

Oil and gas activities would cause a disruption in grazing patterns, a short-term loss of forage, and possibly cause lambs and calves to be orphaned. The closure of the four two-track trails (Raymond Canyon, White Canyon, and two trails off of the IGO Speedway) would have both beneficial and adverse impacts to livestock grazing. Closure of these trails would reduce conflicts between off-road vehicles and livestock. However, livestock operators would also be prohibited from using these trails and would have to bring in supplies (e.g., salt blocks) by horseback instead of by trucks.

Traditional livestock grazing practices may be modified within the ACEC if necessary to protect the identified wildlife values.

Wilderness Including Recreation

Wilderness Values

Under the proposed action moderately adverse impacts would occur to the wilderness values within the WSA. Wilderness values would be preserved somewhat within the ACEC, but this preservation would be incidental to the ACEC's major objectives. The Raymond Mountain Wildlife ACEC would provide some protection for 13,530 acres out of the WSA's 32,936 acres. The ACEC designation is raising public awareness of the values of the area and could possibly inspire public assistance in maintaining the naturalness within the WSA.

Naturalness would be enhanced by off-road vehicle limitations and the proposed two-track trail

closures. However, anticipated oil and gas activities would adversely affect the naturalness of the WSA in the short term.

Opportunities for solitude would decrease within the WSA. Although the steep terrain offers outstanding opportunities for solitude, oil and gas seismic activities are easily observed and heard from canyon bottoms, as well as ridgetops. As oil and gas activity is expected to continue and possibly increase, this adverse impact would be expected to occur.

Under the proposed action some of the WSA's supplemental values would be adversely affected, while others would be retained. The overall adverse impact can be attributed to the continuation of oil and gas activities in the WSA.

Recreation Opportunities

Under the proposed action minor beneficial impacts would occur to recreation opportunities. These beneficial impacts would occur as a result of the designation of the wildlife ACEC and seasonal off-road vehicle (ORV) closures. Management of the ACEC would enhance most recreational activities associated with the area. Protection of big game and aquatic habitat would increase opportunities for fishing and hunting. Seasonal ORV closures would also protect crucial big game winter range and have a beneficial impact on hunting opportunities.

ORV limitations and two-track trail closures would restrict ORV recreation opportunities year-round. Hunting would decrease in the short term as traditional hunting camps would be more difficult to reach with closure of the four two-track trails (Raymond Canyon, White Canyon, and two trails off of IGO Speedway). However, the protective measures proposed in the ACEC, as well as the seasonal ORV closure, would result in an increase in hunting opportunities in the long term. Hunting opportunities would also improve as a result of the closure to mineral activity (October 1 to November 1), to mineral activity which would minimize disturbance to wildlife and would have a beneficial impact on hunting.

Fishing opportunities are also expected to increase if the cutthroat trout population increases. If the Fish and Wildlife Service changes the classification of the Bonneville or Bear River cutthroat trout from sensitive to threatened and endangered, the Wyoming Game and Fish Depart-

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ment would probably close Huff and Raymond creeks to fishing. This would adversely affect fishing opportunities in the WSA. Vehicular camping is expected to decrease, but nonvehicular recreation activity (e.g., backpacking, horse packing, etc.) would be expected to increase. Snowmobiling would decrease due to the seasonal ORV limitations, but hiking, sightseeing, and horseback riding may increase slightly. Conflicts between livestock use and recreation use would continue to occur.

Cultural Resources

Under the proposed action no impacts to cultural resources would occur. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under the proposed action moderately adverse impacts would occur to visual resources. The Class II rating for the WSA would remain in effect, as well as the Class III rating for the small area in the southeast portion of the WSA. However, anticipated oil and gas activities outside of the WSA could make it necessary to change portions of the Class II area to Class III, resulting in moderately adverse impacts to visual resources.

Noise

The noise level within the WSA would increase as oil and gas activities increase within and adjacent to the WSA, resulting in highly adverse impacts. The noise level within the ACEC would be less, but would still increase as activities adjacent to the ACEC increase. A slightly adverse impact would continue to occur from the U.S. Air Force Strategic Air Command's low-level training flights.

Land Use Constraints

Under the proposed action no change in county zoning or other local actions would be necessary. The communication site right-of-way (W-0256509) would be affected by the closure of the two-track trail going to Raymond Canyon. Access would still

be allowed, but coordination with the BLM authorized officer would be required. No management conflicts are anticipated with the Forest Service's management of nearby lands.

Socioeconomic Conditions

Grazing, timber, recreation, and oil and gas resources could be affected by the proposed action. Under nonwilderness management the Raymond Mountain Wildlife ACEC restricts oil and gas exploratory drilling and timber harvesting.

Population

Population growth in the region would not be affected by nonwilderness management of the Raymond Mountain WSA.

Employment and Income

Employment and personal income would not be affected significantly in the short or long term by nonwilderness management. The restrictions placed on the oil and gas and timber industries may increase their costs of production, but this action is not expected to withdraw any major portion of these resources from production. Increased recreation use could have a long-term beneficial impact on employment and personal income if retail sales or services increase significantly. Employment in the agriculture sector is not anticipated to increase as a result of increased grazing privileges.

Revenues and Taxes

Nonwilderness management of the WSA is not anticipated to affect revenues generated from the sale of resources, or taxes and royalties received by Lincoln County or the state. Range improvements could increase revenues in the agriculture sector slightly if livestock production increases. Increased recreation use of the WSA may also increase retail sales in Lincoln County and the region.

Economic Value

Increased recreation use of the WSA and livestock production would increase both consumer surplus from recreation and producer surplus from livestock production. Benefits from oil and gas production and timber production would also increase, regardless of the restrictions

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on production imposed by ACEC management (assuming these resources are developed).

IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Under wilderness management minor adverse impacts would occur to air quality. Wilderness designation would assist in maintaining existing air quality and other natural resource values. However, because of constraints to BLM wilderness management (see District-wide Analysis, Chapter 2, Land Use Constraints) some adverse impacts would occur, largely due to oil and gas activities on pre-FLPMA leases.

Topography

Under wilderness management minor adverse impacts would occur to topography. This impact would be a result of allowed oil and gas activity on pre-FLPMA and state leases.

Paleontological Resources

Under wilderness management impacts to paleontological resources would be negligible.

Soils

Under wilderness management minor adverse impacts would occur to soils. A decrease in soil loss would occur because surface-disturbing activities would be reduced. Motor vehicle restrictions would reduce soil compaction and, in some instances, streambank erosion. However, allowed oil and gas activity on pre-FLPMA leases and maintenance of existing range improvements utilizing motor vehicles would continue.

Water Resources

Under wilderness management minor adverse impacts would occur to water resources. Water quality throughout the WSA could improve under wilderness management. However, allowed oil and

gas activities on pre-FLPMA leases would continue to cause adverse impacts to water resources. The elimination of motor vehicles in the WSA would help stabilize streambanks at stream crossings, reducing erosion and subsequently sedimentation. Water runoff would decrease as soil compaction decreases, resulting in improved water quality.

Vegetation Including Forest Resources

Under wilderness management vegetation (including forest resources), when viewed purely as a natural resource, would incur minor adverse impacts. Allowed oil and gas activities on pre-FLPMA leases would continue to cause vegetation loss, due to the surface disturbance associated with oil and gas activities. Motor vehicles would be prohibited within the WSA, decreasing the disturbance to vegetation slightly. All two-track trails would be closed, allowing natural revegetation.

Livestock grazing would continue in the WSA, but no new range improvements would be authorized, foregoing any increased forage production that might have been realized. Vegetation manipulation would not be allowed. If it became economically feasible to harvest the forest resource (see Socioeconomic Conditions), the opportunity to manage this resource would be precluded.

Fire Management

Suppression of naturally occurring fires would usually be precluded. Fire suppression methods would be constrained because motor vehicles would not usually be allowed within the WSA, except in emergency situations.

Wildlife

Under wilderness management no impacts would occur to wildlife. The overall impact of wilderness management on wildlife is a result of two factors, additional protection for wildlife and the adverse impacts resulting from allowed oil and gas activities on pre-FLPMA leases. As a result of these factors, wilderness management would not have a significant impact on wildlife. Oil and gas activities on pre-FLPMA leases would continue to take place with application of at least nondegradation requirements. The Bonneville or Bear River cutthroat trout's habitat would be protected. Motor

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vehicle use would be prohibited within the WSA (with the exception of the motor vehicle use associated with oil and gas activities), eliminating, for the most part, the disturbance to big game and the aquatic habitat caused by vehicles crossing streams. Prohibiting timber harvesting and vegetation manipulation would allow natural succession of the ecosystem. Raptor nesting success would be enhanced, due to decreased disturbance.

Under wilderness management no threatened or endangered species would be affected.

Livestock Grazing

Wilderness management would not impact livestock grazing. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act, and subsequent legislative reports have discussed the importance of grazing privileges. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock.

There could be some loss of efficiency for livestock management in that motor vehicles would generally be excluded from the area if designated wilderness. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determined that other alternatives (such as horseback) do not exist and wilderness values would not be impaired. There also would be a loss of potential additional forage production because spraying and prescribed burning would be excluded from the wilderness area. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock.

Wilderness Including Recreation

Wilderness Values

Under wilderness management minor adverse impacts would occur to the wilderness values within the WSA, due to allowed oil and gas activities on pre-FLPMA and state leases. Wilderness management would provide protection for those areas of the WSA with low potential for oil and gas development. However, in those areas where oil and gas activity takes place on pre-

FLPMA leases, the wilderness values would be lost in the long term.

Recreation Opportunities

Under wilderness management minor beneficial impacts would occur to recreation opportunities. Wilderness management would enhance most recreational activities associated with this area. Protection of big game and aquatic habitat would increase opportunities for fishing and hunting.

Motor vehicle use would be prohibited within the WSA, therefore, vehicular camping, ORV use (including hunting-related), and snowmobiling would be foregone. In the short term, hunting would be expected to decrease as traditional hunting camps would be more difficult to reach without motor vehicles. However, the demand for good hunting areas and the expected influx of new people into the area, would result in an increase in hunting in the long term.

If the Fish and Wildlife Service changes the classification of the Bonneville or Bear River cutthroat trout from sensitive to threatened and endangered, the Wyoming Game and Fish Department would probably close Huff and Raymond creeks to fishing. This would adversely affect fishing opportunities in the WSA.

Wilderness designation itself may result in an increase in recreation use initially, due to the increased publicity associated with wilderness designation. Activities such as sightseeing, horseback riding, backpacking, and hiking would be included in this increase. A slight increase in fishing would occur as these types of recreation use increase.

Activity on pre-FLPMA oil and gas leases would continue to have an adverse impact on recreation opportunities. Conflicts between livestock use and recreation use would continue to occur.

Cultural Resources

Under wilderness management no impacts to cultural resources would occur. Allowed oil and gas exploration activities on pre-FLPMA leases could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

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Visual Resources

Under wilderness management minor adverse impacts would occur to visual resources. The WSA would be managed as Visual Resource Management Class I, instead of Class II and Class III. However, oil and gas activities on pre-FLPMA leases would continue in the WSA, having minor adverse impacts on the visual resources.

Noise

The noise level within the WSA would increase as activity on pre-FLPMA oil and gas leases takes place within and adjacent to the WSA, resulting in moderately adverse impacts. The U.S. Air Force Strategic Air Command's low-level training flights for B-52 bombers pass over the WSA causing occasional brief periods of loud noise. Under wilderness management BLM would initiate negotiations with the Air Force to discuss route changes.

Land Use Constraints

Wilderness management would not conflict with county zoning, but it would conflict with the management of state lands within and adjoining the WSA. No change in county zoning or other local actions would be necessary.

There would be a difference in management direction between the WSA and the Forest Service lands near the WSA. The Forest Service is managing National Forest lands as nonwilderness (multiple use), but this difference would not cause any conflicts.

Socioeconomic Conditions

Grazing, timber, recreation, and oil and gas resources could be affected by wilderness management of the WSA. Timber resources would be adversely impacted to the greatest degree by wilderness management.

Population

Wilderness management of the WSA would have negligible impacts on the population of Lincoln County or the region. Timber would be the only resource precluded from development that could increase the population of the region.

Employment and Income

Under wilderness management some range improvement practices would not be allowed to take place. This would result in foregone employment opportunities associated with these range improvements, and any additional proprietor's income that would have resulted from increased livestock production would also be foregone. The opportunity to harvest timber from the WSA would be precluded, although no timber harvesting has taken place in the WSA to date. Any potential for increased employment and income from harvesting this resource would be foregone. Increased recreation opportunities would have the potential to increase employment and income over the long term. No impact on employment and income in the oil and gas industry would be expected from wilderness designation of the WSA; due to the high percentage (96 percent) of pre-FLPMA leases, which would allow exploration and development to take place.

Revenues and Taxes

The potential revenue from increased livestock production would be foregone. In addition, all revenue from potential timber sales would also be lost. All indirect revenues from business purchases in the region would also be foregone. The potential does exist to increase direct revenue from retail sales and indirect revenue in the economy from increased recreation activities.

Ad valorem taxes, severance taxes, sales tax, and federal royalties from oil and gas production (assuming these resources are located and developed) would not be affected by wilderness management of the WSA. Revenues collected by the BLM from timber sales and returned to the state would be lost.

Economic Value

Increased recreation use of the WSA would increase consumer surplus from recreation. Withholding timber resources and foregoing potential increases in livestock production would preclude potential economic benefits from timber and hold benefits from livestock production at the existing level. Benefits from oil and gas production would accrue if development takes place.

SUMMARY OF IMPACTS

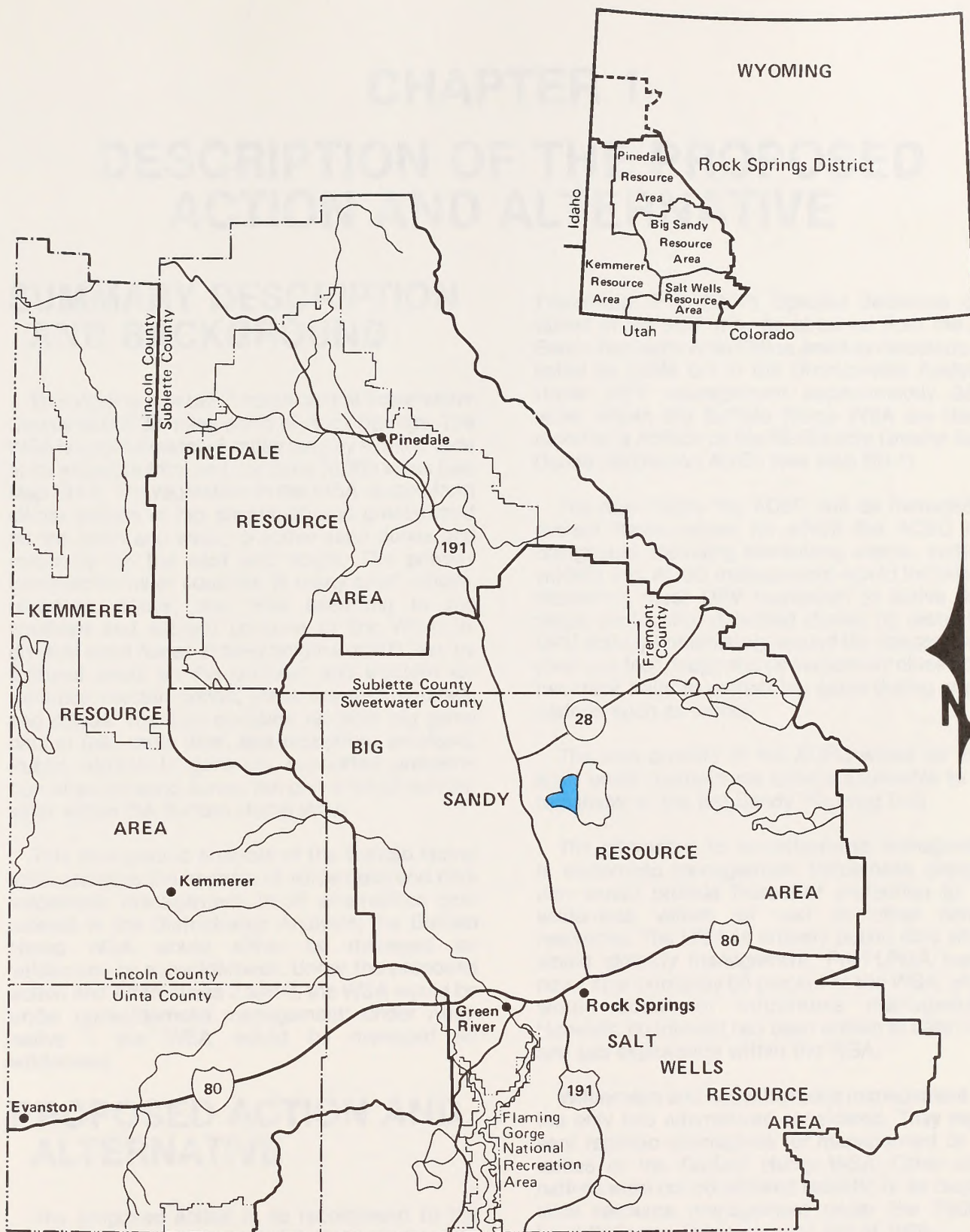
Site-specific impacts for the Raymond Mountain WSA are summarized as follows: Implementation of the proposed action would result in minor to moderately adverse impacts to the present natural resource base. Wilderness designation would result in very little change from the existing situation. Minor adverse impacts would occur to the present natural resource base under wilderness management. The adverse impacts occurring under the proposed action and the wilderness alternative are a result of increased oil and gas activities, which are anticipated to occur.

Wilderness values would be adversely impacted under the proposed action and the wilderness alternative, due to anticipated oil and gas explora-

tion and possible development. The proposed action would result in moderately adverse impacts and the wilderness alternative would result in minor adverse impacts.

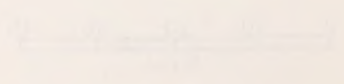
Under the proposed action and the wilderness alternative, minor beneficial impacts would occur to recreation opportunities. This beneficial impact reflects a slight increase in hunting and fishing opportunities.

Under the proposed action and the wilderness alternative, beneficial impacts would occur to the present socioeconomic conditions. Moderately beneficial impacts would occur under the proposed action, and minor beneficial impacts would occur under the wilderness alternative. The wilderness alternative would have less beneficial impacts because the timber resources could not be harvested.





Printed by the
Geographical Institute
of the University of
Oxford, 1911



CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

This WSA is located in north-central Sweetwater County about 30 miles north of Rock Springs. The WSA is approximately 5 miles long by 4 miles wide at its widest points, and contains 10,300 acres (see Map BH-1). The vegetation in the WSA ranges from climax stands of big sagebrush and greasewood on the north and west, to active sand dunes and meadows on the east and south. The primary topographic relief consists of many sand valleys, blowouts, dunes, and hills occurring in the southern and eastern portions of the WSA. Individual sand dunes exceed heights of 100 feet. Interdunal areas on the northern and western extremities contain ponds, grass covered marshes, and playas. The area contains valuable big game habitat (elk, mule deer, and pronghorn antelope). Public comments generally supported preservation of active sand dunes, but only a small number exist within the Buffalo Hump WSA.

This site-specific analysis of the Buffalo Hump WSA analyzes the impacts of wilderness and non-wilderness management. In all alternatives considered in the District-wide Analysis; the Buffalo Hump WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternatives 2 and 3, the WSA would be under nonwilderness management; under Alternative 1 the WSA would be managed as wilderness.

PROPOSED ACTION AND ALTERNATIVE

The proposed action is to recommend to the President, via the Secretary of the Interior, that this WSA not be designated wilderness. Under the proposed action the WSA would be managed under the guidelines of the Big Sandy Management

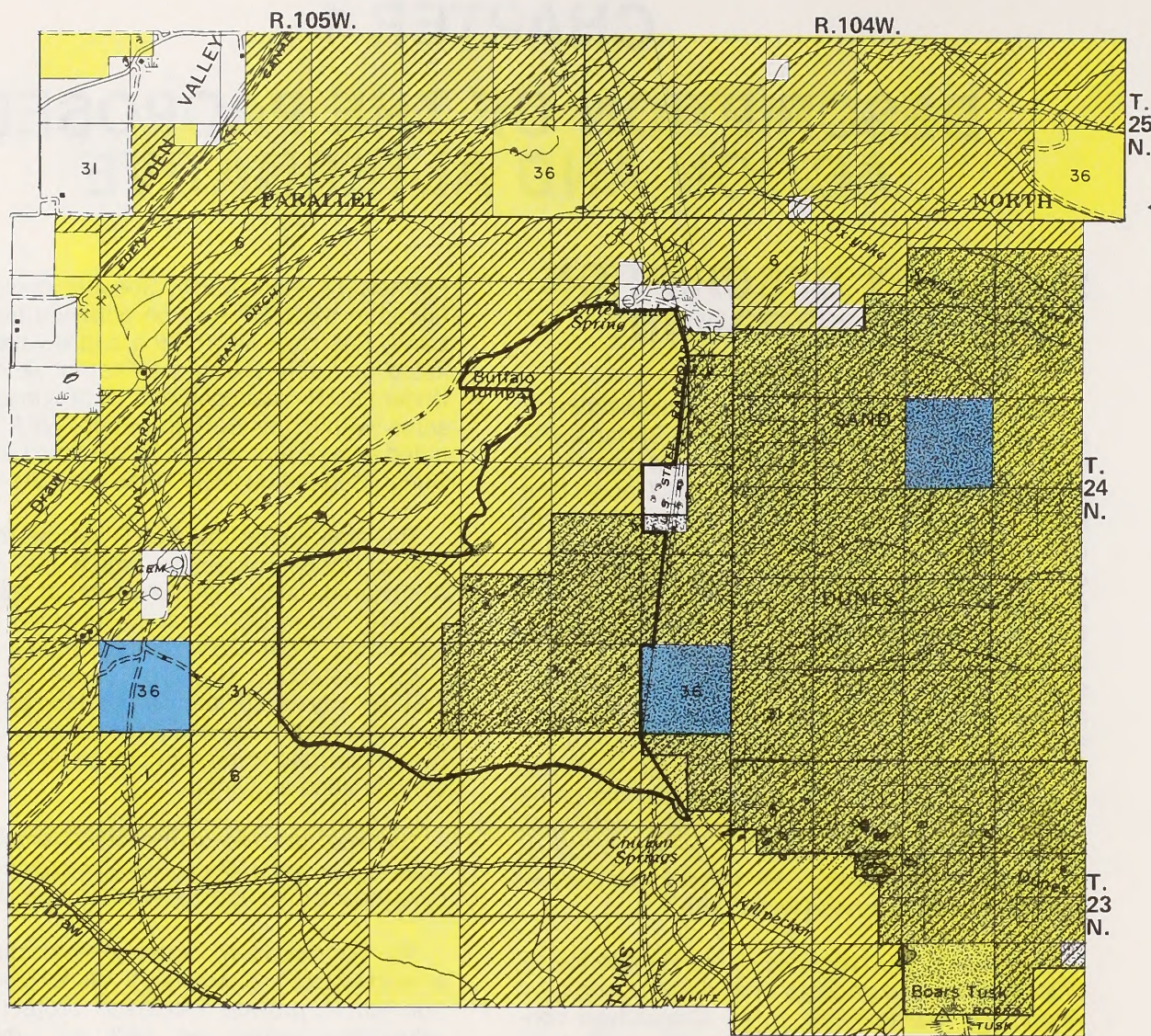
Framework Plan (MFP). Specific decisions contained in the MFP may be obtained from the Big Sandy Resource Area Office, and key decisions are listed on Table D-3 in the District-wide Analysis. Under MFP management approximately 3,500 acres within the Buffalo Hump WSA are designated as a portion of the 38,480 acre Greater Sand Dunes Recreation ACEC (see Map BH-1).

The area inside the ACEC will be managed to protect those values for which the ACEC was designated, including recreation, scenic, cultural, wildlife, etc. ACEC management would include: (1) restricting most ORV recreation to active dune fields, protecting stabilized dunes; (2) restricting ORV activity immediately around the deeper ponds (over one foot deep); and (3) seasonally close some two-track trails to protect big game during crucial periods such as winter.

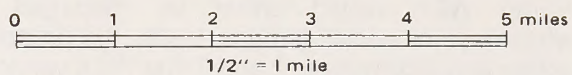
The area outside of the ACEC would be managed under multiple-use criteria applicable to the remainder of the Big Sandy Planning Unit.

The alternative to nonwilderness management is wilderness management. Wilderness designation would provide increased protection to the wilderness values as well as other natural resources. The WSA is entirely public land which would simplify management. Pre-FLPMA leases cover approximately 60 percent of the WSA, which would constrain wilderness management. However, no interest has been shown to date in oil and gas exploration within the WSA.

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values of the Buffalo Hump WSA. Other alternatives were not considered realistic or as responsible resource management under the Federal Land Policy and Management Act of 1976.



- Wilderness Study Area Boundary
- Excluded Area
- Greater Sand Dunes Recreation ACEC
- Public Land (Administered by BLM)
- Private Land
- State Land
- Federal Minerals



Map BH-1
 Buffalo Hump WSA
LAND AND MINERAL STATUS

CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Buffalo Hump WSA is characteristic of the semiarid cold desert. Average daytime temperatures for the area range from 65° F. in July to 10° F. in January; with a growing season of approximately 165 days for grasses.

The area receives approximately eight inches of precipitation annually, with less than half in the form of snow. The prevailing winds are generally from the west. Wind speeds normally average 15 mph, but gusts may reach as high as 82 mph preceding strong frontal passages. The highest wind speeds normally occur in late winter and spring.

AIR QUALITY

Within the Buffalo Hump WSA air pollution levels are low. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) do not exceed allowable standards (Science Applications, Inc. 1980). Particulate matter, spawned by the combination of wind and an arid countryside, results in some degree of natural pollution; however, this type of pollution is negligible.

TOPOGRAPHY

This WSA is very similar in nature to the Sand Dunes WSA (see Sand Dunes WSA, Chapter 2, Topography). Active and stabilized sand dunes characterize the area. Individual sand dunes exceed heights of 100 feet. Elevation of the WSA averages 6,800 feet. Interdunal areas on the northern and western extremities contain ponds, grass covered marshes, and playas.

GEOLOGY

Fluviatile rocks of Eocene age (the Wasatch Formation) outcrop over most of the area. Unexposed rocks include about 25,000 feet of sedimentary rocks which range in age from Paleocene to Cambrian overlying the crystalline Precambrian basement.

Mineral Resources

Hydrocarbons are the most valuable potential mineral resources of the WSA. About 60 percent of the WSA is covered by pre-FLPMA leases (see Map BH-2). The oil and gas development potential is unknown and industry interest is low.

SOILS

Four broad soil types occur in the Buffalo Hump WSA. They include: (1) stabilized dunes; (2) dune land; (3) moderately deep soils (residual uplands); and (4) shallow soils (residual uplands). See Appendix F for detailed descriptions of these soil types.

Most of the soils in the Buffalo Hump WSA are classified as stabilized dunes with a few pockets of other soil types found in the southeastern and northwestern corners.

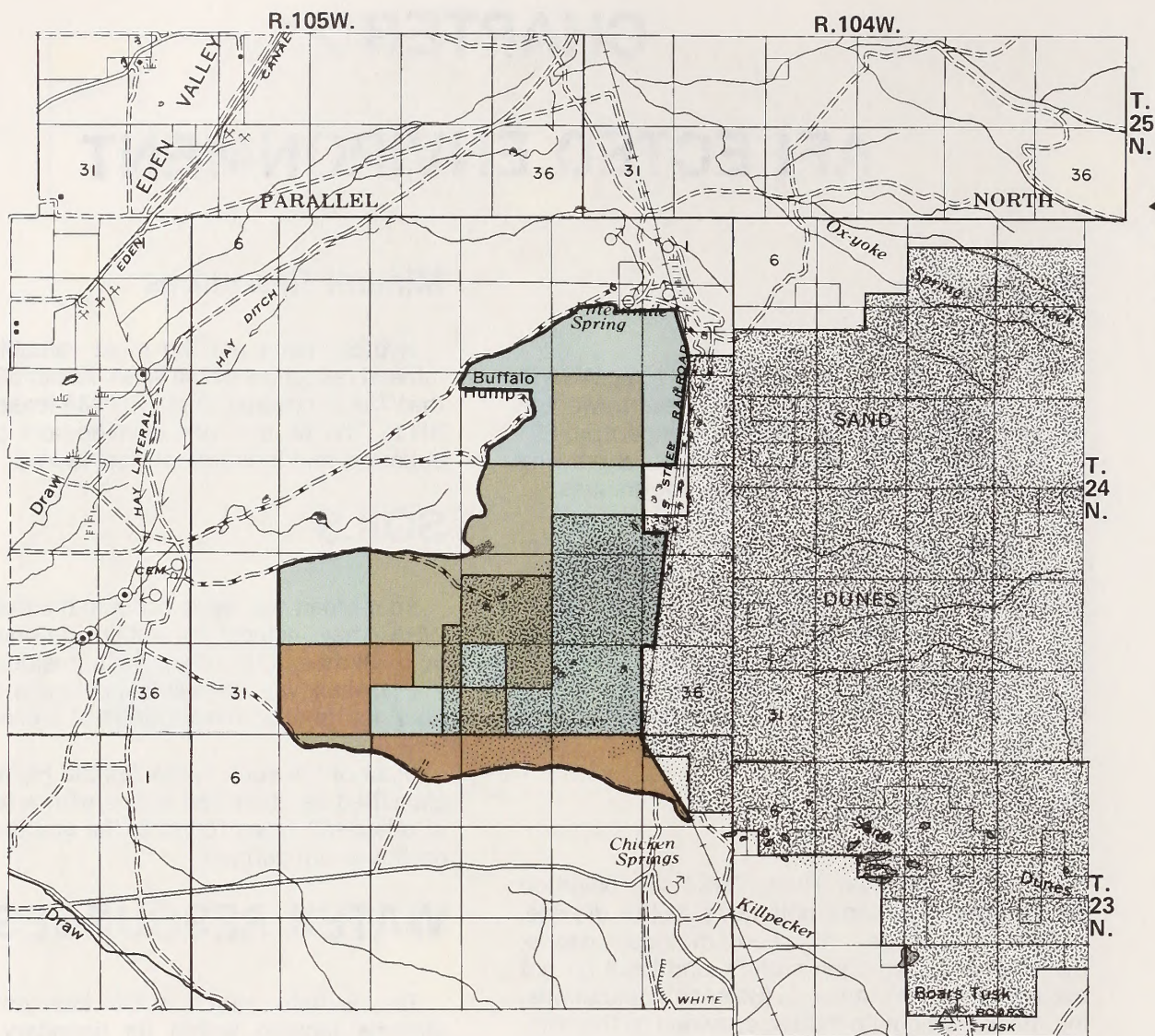
WATER RESOURCES

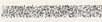

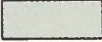
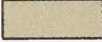

The Buffalo Hump WSA has no perennial streams located within its boundary. However, there are numerous small ponds and intermittent streams which comprise the bulk of water in the area. The source of this water is primarily annual runoff during spring and early summer as a result of snowmelt. There are no wells or reservoirs located within the WSA.

VEGETATION

The area within the WSA was included in a range survey conducted in 1976. Vegetation types were mapped and transects run to determine vegetation production. Data from this source were used to describe the vegetation.

Sand dune areas that have not been stabilized are essentially devoid of vegetation. In a few areas, some pioneer type plants are beginning to stabilize the active dunes. Scurfpea is one of the first plants to begin invading the active dunes. Between the dunes are small wet and dry meadows. Grass species are common on these sites. Depending on the meadow, common species include sedges, inland saltgrass, cordgrass, and wheatgrasses.



- Wilderness Study Area Boundary
-  Excluded Area
-  Greater Sand Dunes Recreation ACEC
-  Pre-FLPMA Leases
-  Post-FLPMA Leases
-  Not Presently Leased

0 1 2 3 4 5 miles
1/2" = 1 mile

Map BH-2
Buffalo Hump WSA
OIL AND GAS LEASES

BUFFALO HUMP



Purple bee plant on stabilized duneland.

Many of the dunes are stabilized by vegetation and are no longer actively moving. Depending on the stage of succession or the amount of time the dunes have been stabilized, vegetation varies considerably. Vegetation on some of the stabilized dunes is the big sagebrush type. Big sagebrush and Douglas and rubber rabbitbrush are common shrub species. Spiny hopsage is also present on some dunes. Common grass species are needle-and-thread, Indian ricegrass, and thickspike wheatgrass. Other grasses or grasslike species present include Sandberg bluegrass, and thread-leaf sedge. A variety of forbs are also present.

Other dune areas are primarily covered by shrub species with little understory. Common shrub species on these lands are big sagebrush, rubber and Douglas rabbitbrush, black greasewood, and spiny hopsage.

Big sagebrush is the dominant vegetation type over much of the area. The most common grass species associated with big sagebrush are thickspike wheatgrass, Indian ricegrass, Sandberg bluegrass, needle-and-thread, and bottlebrush squirreltail. A variety of annual and perennial forbs are present seasonally.

WILDLIFE

The Buffalo Hump WSA provides good wildlife habitat. In this section only those major species which commonly occur in the WSA will be discussed. A complete list of species found in this WSA is available for review in the Big Sandy Resource Area Office.

Valuable habitat for big game is found within the area. Elk and mule deer occupy the area during the summer, using the many fresh water ponds found in the southeastern portion of the WSA. These animals linger in the area during the hunting season, using the broken topography and relative inaccessibility to their advantage. Deer may use the area during the winter, but elk generally migrate to the east. Pronghorn antelope move from their summer ranges, north of the WSA, onto the western portions of the WSA for the winter.

Raptor habitat in the Buffalo Hump WSA is limited, due to a general absence of suitable nesting sites. Although no raptor inventories have been conducted in this WSA (due to its low raptor potential), there are two small areas in the northern sections that have been identified as having potential habitat.

Red foxes and coyotes have been identified as using the WSA. Red fox habitat is generally limited to the western and northern portions of the WSA. Coyotes are common throughout the WSA. Bobcats also use the area, however, their occurrence cannot be considered common, due to generally low populations.

WILD HORSES

In February 1982 approximately 100 wild horses were present within the Sand Dunes and Buffalo Hump WSAs. These WSAs do not fall within a wild horse management area because management objectives are to consolidate these horses into the Divide Basin Wild Horse Herd Management Area (WHHMA). The Divide Basin WHHMA presently contains 2,307 horses (February 1982 inventory count) and management objectives are to reduce the number to 500 horses in accordance with the Big Sandy Management Framework Plan and the WHHMA plan by fall 1984. This objective will be implemented regardless of wilderness or non-wilderness management.

LIVESTOCK GRAZING

The Buffalo Hump WSA is located in both the Pacific Creek and the Sands grazing allotments. Detailed allotment management plans for these areas are available for review in the Big Sandy Resource Area Office. The AUM numbers listed below do not reflect actual use for livestock; the total AUMs include use by wildlife, wild horses, etc., and areas unsuitable for livestock grazing.

BUFFALO HUMP

The Pacific Creek Allotment has an approximate grazing capacity of 10,430 AUMs for cattle or 13,512 AUMs for sheep on all public lands within the allotment. Currently, one permittee grazes cattle on the allotment from May 1 until December 15 each year. Eight other permittees use the allotment for trailing both cattle and sheep during the spring and fall.

The Sands Allotment has an approximate allowable grazing capacity of 4,470 AUMs for cattle or 5,486 AUMs for sheep on all public lands within the allotment. Currently, six permittees graze cattle or sheep on the allotment with the use occurring from May 1 until December 14. Two other permittees use the allotment for trailing sheep during the spring and fall. Within the WSA the approximate grazing capacity for cattle is 311 AUMs or 458 AUMs for sheep.

Currently no new range improvements are planned for this WSA, but the potential for new improvements exist.

WILDERNESS INCLUDING RECREATION

The BLM inventoried the Buffalo Hump area and all contiguous public lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory, the Bureau determined that the Buffalo Hump WSA does meet the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Size

This WSA totals 10,300 acres of which 907 acres are withdrawn to the Bureau of Reclamation. This acreage total is an increase over the original acreage because during the initial inventory the northern boundary road was incorrectly plotted from aerial photos. After state land (120 acres) and private land (180 acres) were dropped during the intensive inventory and the road correction made, 400 acres of public land were added to the original acreage.

Naturalness

This WSA is essentially in a natural condition exhibiting an undisturbed sagebrush-grassland ecosystem intermingled with active sand dunes. Intrusions consist of five two-track trails and one seismograph line for a total of 5.5 miles; one segment of sand fence; and two recently dug livestock pit reservoirs. All the two-track trails are faint, overgrown with vegetation, and dead end after short distances or connect with boundary roads. The livestock reservoirs are located along the southern boundary road. All these intrusions are considered to have only minor impact on the integrity of the area.

Outstanding Opportunities (Recreation)

The remoteness of the area provides ample solitude, especially in the southern and eastern portions of the WSA due to their topographic relief. The best opportunities for primitive and unconfined recreation can also be found in the southern and eastern portions of the WSA. These include hiking, backpacking, camping, bird-watching, wildlife photography, horseback riding, and hunting.

Supplemental Values

Ecological and cultural values are also found in the WSA. Ecologically, this area typifies a sagebrush-bunchgrass ecosystem featuring gently rolling sagebrush covered sand hills, with some active barren sand dunes. This area attracts wild horses, mule deer, a unique herd of desert elk, and large numbers of pronghorn antelope. Signs were found that indicate raptors and coyotes are frequent visitors to the area. Reports of mountain lion sightings have been received.

Of cultural interest, two very important archaeological sites have been found in and within one mile of the WSA (see Cultural Resources). Therefore, it is highly probable that other notable sites may exist in or around Buffalo Hump WSA.

BUFFALO HUMP

Greater Sand Dunes Recreation ACEC

The Greater Sand Dunes Recreation ACEC was designated to protect recreation, scenic, cultural, wildlife, and unique natural system values found in an area covering 38,480 acres, extending east-west across the Killpecker Sand Dunes. This area encompasses 34 percent of the WSA (see Map BH-1). The ACEC management plan (which will be completed in 1983) provides wildlife and cultural resource protections and promotes appropriate recreation use. The ACEC management prescriptions would restrict most off-road vehicle (ORV) recreation to active dune fields (protecting stabilized dunes); restrict ORV activity immediately around the deeper ponds (over one foot deep); and seasonally close some two-track trails to protect big game during crucial periods such as winter. Protection of the Sands elk herd would be of paramount importance to ensure that the herd and its habitat are sustained, promoting long-term recreation and wildlife values unique to this area. Effective protection would involve coordination with the Wyoming Game and Fish Department.

Under nonwilderness management the ACEC portion of the WSA would be managed for its unique values. Under wilderness management the BLM Wilderness Management Policy would take precedence over the management prescriptions of the ACEC management plan.

CULTURAL RESOURCES

Two very important archeological sites (Finley and Eden-Farson) have been found within one mile and three miles, respectively, of the WSA. The Eden-Farson site is a late Prehistoric Period habitation site which has been well documented through excavation. Several house areas were located and a large amount of antelope bone was recovered during these investigations. Portions of the site have been preserved for future investigation.

The Finley site is an important paleoIndian site investigated in the early 1940's. The association of Cody-complex artifacts with each other and with bones of extinct bison was first demonstrated here, and the site became well-known as the type site for Eden projectile points. The evidence indicated that the Finley site is one of man's earliest inhabited sites in North America.

The first homestead settlement of Eden Valley is located on the northwestern fringe of the WSA. Known as Washington's Homestead, this historic location is marked by the graves of the Washington family, foundation remains, and a few remnant sections of fence.

VISUAL RESOURCES

This wilderness study area is classified as Visual Resource Management (VRM) Class III. The basic management guidelines for this VRM class is described in detail in the District-wide Analysis, Chapter 2, Visual Resources.

NOISE

Existing noise levels within the WSA are low with occasional increases from oil and gas activities. The oil and gas activities do not presently cause much disturbance except for an occasional truck passing nearby and during geophysical exploration activities, particularly when explosives are used.

LAND USE CONSTRAINTS

The lands surrounding the Buffalo Hump WSA are predominantly public lands administered by BLM. There are some private lands adjacent to the WSA on the north and northeast. The wilderness study area is located within Sweetwater County and is zoned as an agricultural district. As an agricultural district, there are numerous uses which may be allowed in the area. Some of these uses are: mineral exploration and drilling; oil and gas exploration and development; railway rights-of-way; and transmission lines, stations, and towers. More detailed information on zoning districts is available in the Zoning Resolution of Sweetwater County, Wyoming, and in the District-wide Analysis, Chapter 2, Land Use Constraints.

SOCIOECONOMIC CONDITIONS

This WSA is located in Sweetwater County. The current socioeconomic conditions of Sweetwater County are presented in the District-wide Analysis, Chapter 2, Socioeconomic Conditions.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumptions are used for impact analysis:

1. The oil and gas potential of this WSA is unknown and industry interest is low. Approximately 60 percent of the WSA is pre-FLPMA leased. It is assumed that at least some exploration drilling will occur in this WSA.
2. Although the WSA lies within an oil shale withdrawal, development of this resource will probably not occur, due to its low economic potential.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action no impacts would occur to air quality. Pollution levels are currently low and there would be little, if any, activity in the area significant enough to cause air quality to deteriorate.

Topography

Under the proposed action no impacts would occur to topography. If surface disturbance associated with oil and gas exploration occurred on stabilized dunes, the dunes would probably revert to an active state.

Soils

Under the proposed action no impacts would occur to soils. Surface disturbance to soils would

probably be minimal. If surface disturbance associated with oil and gas exploration occurred on stabilized dunes, the dunes would probably revert to an active state. Motor vehicle use will be restricted to existing roads and trails, but would still contribute to some erosion. Soils would continue to be subject to water and wind erosion as in the past.

Water Resources

Under the proposed action no impacts would occur to water resources. Any possible impacts from surface disturbing activities to small intermittent streams could be mitigated through application of site-specific mitigation requirements.

Vegetation

Under the proposed action no impacts would occur to vegetation. Since there is little potential for energy development in the WSA, disturbance to vegetation normally caused by oil and gas would not be present. Within the Greater Sand Dunes ACEC (see Map BH-1), ACEC management prescriptions would be applied to surface-disturbing activities in order to preserve vegetation that is essential to the protection of the ACEC values. Vegetation associated with the ponds would receive the most protection, although grazing would continue.

Disturbance to vegetation caused by off-road vehicle (ORV) use would probably not increase from the present situation. ORV use would be restricted to existing roads and trails, thereby limiting the amount of disturbance to vegetation.

Wildlife

Under the proposed action no impacts would occur to wildlife. As only minimal oil and gas exploration is anticipated in the WSA, disturbance to elk, deer, and pronghorn antelope would probably not increase. ORV restrictions would limit motor vehicle use to existing roads and trails, thereby slightly reducing disturbance to big game species. Over the long term, big game populations would probably not increase from the present situation.

The disturbance to raptor nesting sites probably

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would not increase from the present situation. Implementation of the proposed action would not affect the large predator species, because these species have low populations and very large ranges.

Wild Horses

Under the proposed action minor adverse impacts would occur to wild horses, due to their planned removal from the WSA. There will be no change in the management of the wild horse herds. The horses within the WSA will be removed in accordance with the Divide Basin Wild Horse Herd Management Plan.

Livestock Grazing

Under the proposed action no impacts would occur to livestock grazing. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock. Maintenance of facilities, such as fences and reservoirs, would continue the same as in the past, with the use of motorized equipment.

Wilderness Including Recreation

Wilderness Values

Under the proposed action no impacts would occur to the wilderness values of the WSA. Due to the low development potential of the oil and gas leases in the WSA, disturbance of the wilderness values is unlikely to occur.

Recreation Opportunities

Under the proposed action no impacts would occur to recreation opportunities. Vehicle use would be restricted to existing roads and trails. The current recreation uses, hunting, hiking, sightseeing, etc., would not change from current levels.

Cultural Resources

Under the proposed action no impacts to cultural resources would occur. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal*

Regulations, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under the proposed action no impacts would occur to visual resources. Oil and gas exploration activities would not conflict with the existing VRM Class III. The anticipated intrusions would be acceptable with only minor mitigation being necessary.

Noise

Under the proposed action no increase in noise levels is anticipated.

Land Use Constraints

The proposed action would not conflict with county zoning, nor would it conflict with the management of the state land adjoining the WSA.

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives is a composite of the general trend in resource use for all the WSAs.

The level of livestock grazing and recreation use of the WSA are not expected to change as a result of nonwilderness management. Therefore, receipts from livestock production and recreation expenditures are not expected to be impacted.

Although the potential for oil and gas development in the WSA is unknown and industry interest is low, some exploration drilling may occur. If exploration drilling does occur, it would have a negligible impact on regional employment, income, revenues, and taxes.

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IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Under wilderness management no impacts would occur to air quality. Air quality would remain the same as present.

Topography

Under wilderness management no impacts would occur to topography. If surface disturbance associated with allowed oil and gas activities on pre-FLPMA leases occurred on stabilized dunes, the dunes would probably revert to an active state.

Soils

Under wilderness management minor beneficial impacts would occur to soils. The elimination of motor vehicles in the WSA would decrease surface disturbance caused by this activity, thereby reducing erosion.

Water Resources

Under wilderness management no impacts would occur to water resources. Any possible impacts from allowed oil and gas activities on pre-FLPMA leases would be mitigated through application of at least nondegradation requirements.

Vegetation

Under wilderness management minor beneficial impacts would occur to vegetation. Disturbance to vegetation would decrease slightly from the present situation, due to the elimination of motor vehicles within the WSA. Any surface disturbance caused by allowed oil and gas exploration activities on pre-FLPMA leases would be mitigated through application of at least nondegradation requirements.

Wildlife

Under wilderness management minor beneficial impacts would occur to wildlife. The elimination of motor vehicles would decrease the disturbance to wildlife. In the short term big game populations may increase slightly, but would eventually level off.

The disturbance to raptors would also decrease, but due to limited habitat, the raptors would not increase in number.

Wild Horses

Under wilderness management minor adverse impacts would occur to wild horses, due to their planned removal from the WSA. There would be no change in the management of the wild horse herds attributable to wilderness designation. The horses within the WSA will be removed in accordance with the approved Divide Basin Wild Horse Herd Management Plan. In accordance with the special exceptions allowed under the wilderness management policy, authorization would be required to conduct low-level helicopter roundups within the WSA.

Livestock Grazing

Under wilderness management no impacts would occur to livestock grazing or management. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease of forage available to livestock.

It is anticipated that the number of range improvements that could be implemented could decrease slightly under wilderness management. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock. Existing and future improvements could be maintained with motor vehicles or motorized equipment only if no other alternatives exist. Motor vehicles and motorized

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equipment could be permitted in emergencies or if BLM managers determine that other alternatives (such as horseback) do not exist and wilderness values would not be impaired. This motor vehicle restriction could cause some loss of efficiency in livestock management.

Wilderness Including Recreation

Wilderness Values

Under wilderness management highly beneficial impacts would occur to wilderness values. The wilderness characteristics unique to the WSA would essentially remain the same. Wilderness designation may initially draw a few more people to the WSA, due to the increased publicity associated with wilderness designation, but this would probably level off in the long term.

Recreation Opportunities

Recreation opportunities would not be affected by wilderness designation. Hiking, backpacking, and horseback riding may increase slightly over the short term, due to the increased publicity associated with wilderness designation; however, due to the limited amount of potable water, these activities would probably return to their former levels in the long term.

Wilderness designation would decrease the amount of hunter days spent in the WSA initially. Hunters in the high desert have traditionally used motor vehicles. As wilderness management would exclude most vehicle use, this type of hunting would not occur. However, the elimination of motor vehicle use and less manmade disturbance in the WSA as pre-FLPMA leases expire, could improve hunting quality. Hunter days would remain at approximately the same levels.

The exclusion of motor vehicles could cause a slight decrease in the amount of sightseeing, wildlife photography, etc.

Cultural Resources

Under wilderness management no impacts to cultural resources would occur. Allowed oil and gas exploration activities on pre-FLPMA leases

could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under wilderness management minor beneficial impacts would occur to visual resources. If the WSA is designated as wilderness, BLM would upgrade the Visual Resource Management classification to Class I and would manage it as such. However, due to allowed oil and gas exploration activities on pre-FLPMA leases, the beneficial impacts to visual resources are reduced.

Noise

The noise level in the WSA is expected to decrease slightly, having a minor beneficial impact. This beneficial impact is a result of the elimination of noise-producing vehicles.

Land Use Constraints

Wilderness designation would not conflict with county zoning, but could conflict with management of state lands adjoining the WSA. No developments (factories, plants, etc.) would be permitted within the WSA unless associated with pre-FLPMA lease development. Most rights-of-way for roads, pipelines, etc., would not be allowed unless associated with pre-FLPMA lease development.

Socioeconomic Conditions

The level of livestock grazing and recreation use of the WSA are not expected to change as a result of wilderness management. Therefore, receipts from livestock production and recreation expenditures are not expected to be impacted.

Although the potential for oil and gas development in the WSA is unknown and industry interest is low, some exploration drilling may occur on pre-FLPMA leases. If exploration drilling does occur, it would have a negligible impact on regional employment, income, revenues, and taxes.

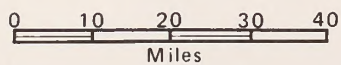
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SUMMARY OF IMPACTS

Site-specific impacts for the Buffalo Hump WSA are summarized as follows: Implementation of the proposed action would have negligible impacts on the present natural resource base, and the wilderness alternative would result in slightly beneficial impacts. This beneficial impact is due to a decrease in disturbance, primarily, the elimination of motor vehicles in the WSA.

Wilderness values would not be affected by the proposed action, due to the minimal oil and gas activity anticipated. Under the wilderness alternative highly beneficial impacts would occur to wilderness values.

Recreation opportunities and present socioeconomic conditions would not be affected under either the proposed action or the wilderness alternative. The type of recreation use may change slightly under wilderness management.



CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

SUMMARY DESCRIPTION AND BACKGROUND

This WSA is located in north-central Sweetwater County about 13 miles southeast of Farson (see Map SD-1); this 27,200 acre WSA comprises a large part of the Killpecker Sand Dunes. Besides the barren active dunes which have superb draws and valleys, this area contains wet meadows, greasewood, big sagebrush, and rabbitbrush communities. Boar's Tusk is a prominent landmark just outside the southern edge of this WSA.

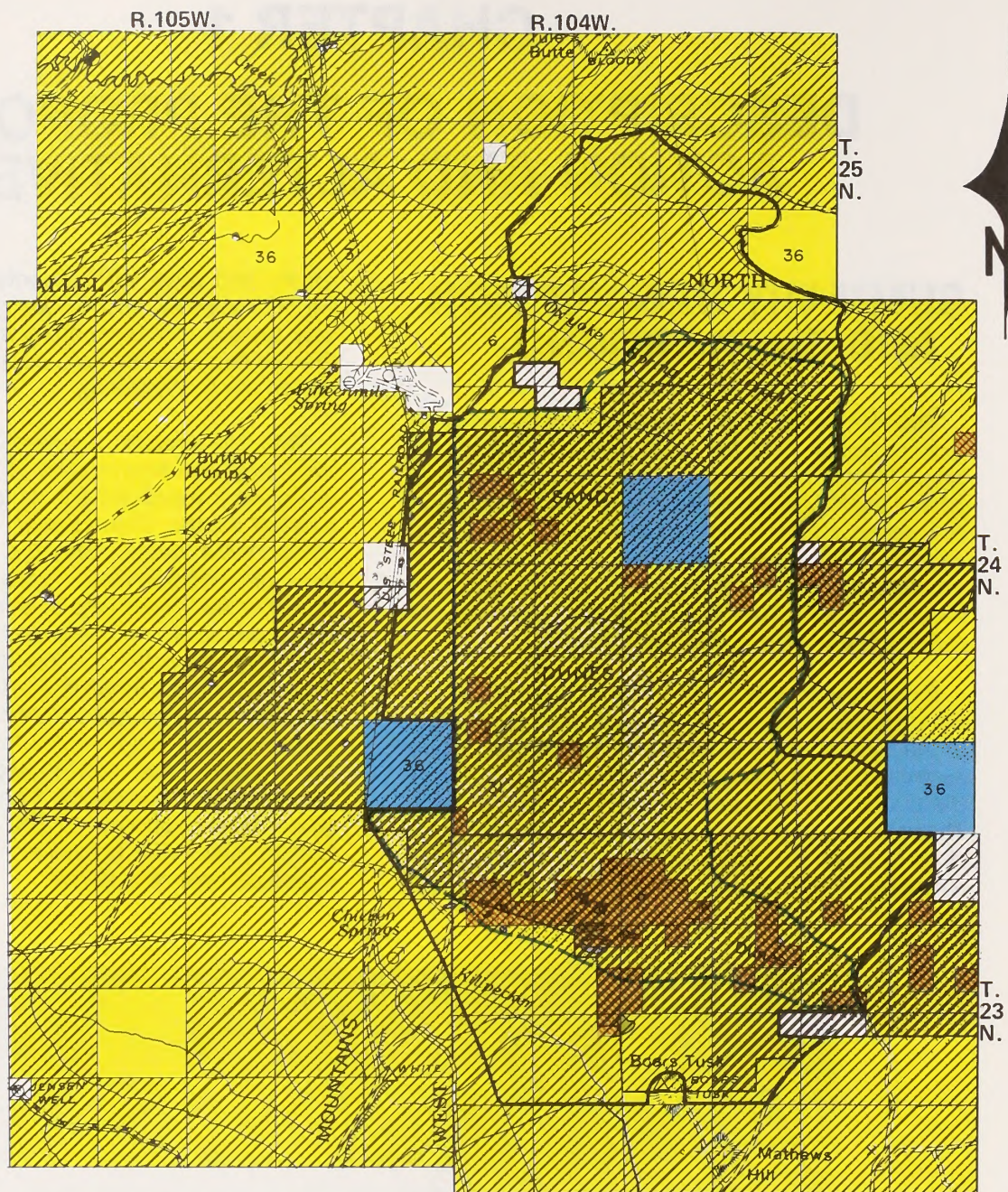
Ecologically, the most unique feature of the Sand Dunes is the eolian ice-cells that feed pools at the base of many large dunes. These are formed as snow and ice accumulate on the leeward side of the dunes and then are covered by blowing sand. These pools, or ponds, range in depth from six inches to eight feet deep, some being crystal clear and almost void of life, while others are muddy,


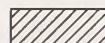
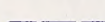
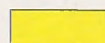




murky and alive with tadpoles, salamanders, insects, waterfowl and various grasses and algae. A very unique wildlife feature in this region is that the dunes presently help support the only herd of desert elk in Wyoming.

This site-specific analysis of the Sand Dunes WSA analyzes the impacts of wilderness and non-wilderness management. In all alternatives considered in the District-wide Analysis, the Sand Dunes WSA would either be managed as wilderness or nonwilderness. There are two boundaries analyzed for wilderness in this site-specific analysis (see Map SD-1). The boundary recommended in the proposed action is smaller (16,280 acres) and does not include much of the high potential oil and gas area in the southeastern portion of the WSA. It also excludes many of the pre-FLPMA leases in the northern and southeastern portions of the Sand Dunes. Alternatives 1 and 2 propose a larger wilderness boundary (27,200 acres), constituting the original WSA boundary. Alternative 3 is the nonwilderness alternative.



Active dunes advance on one of the many ponds.



-  Wilderness Study Area Boundary
-  Greater Sand Dunes Recreation ACEC
-  Proposed Wilderness Boundary
-  Public Land (Administered by BLM)
-  Public Water Reserve
-  Private Land
-  State Land
-  Federal Minerals

0 1 2 3 4 5 miles
1/2" = 1 mile

Map SD-1
Sand Dunes WSA
LAND AND MINERAL STATUS

SAND DUNES

PROPOSED ACTION AND ALTERNATIVES

The proposed action is to recommend to the President, via the Secretary of the Interior, that a portion (16,280 acres) of this WSA be designated wilderness. The proposed action represents a compromise between protection of a unique active sand dune area and avoidance of the following management conflicts: (1) pre-FLPMA leases and the high potential oil and gas area; (2) most of the active off-road vehicle (ORV) use area; and (3) the possible development of the former Known Recoverable Coal Resource Area in the southeast portion of the WSA. The thin section of proposed wilderness within the high potential area (see Map SD-1) would allow drilling of the high potential area and still maintain a pristine active dunes area. Well spacing within that portion of the high potential oil and gas area in the proposed wilderness would be designed to avoid locating wells in active dunes area.

Alternatives 1 and 2 (which are identical for the Sand Dunes WSA) propose a larger wilderness boundary (27,200 acres). Alternatives 1 and 2 would not avoid the management conflicts mentioned previously.

Alternative 3 is to recommend to the President, via the Secretary of the Interior, that this WSA not be designated wilderness. This WSA would be managed under the guidelines of the Big Sandy Management Framework Plan (MFP). The MFP designates approximately 22,000 acres within the Sand Dunes WSA as a portion of the Greater Sand Dunes Recreation ACEC (see Map SD-1).

This ACEC is also a part of the proposed action and Alternatives 1 and 2, but is not as significant in those cases because the proposed wilderness management provides greater protection than ACEC management would afford. Under Alternative 3 about 80 percent of the WSA would be managed under the Greater Sand Dunes Recreation ACEC Management Plan, to promote appropriate recreation use and provide wildlife and cultural resource protection. This management would restrict most ORV recreation to active dune fields (protecting stabilized dunes); restrict ORV activity immediately around the deeper ponds (over one foot deep); and seasonally close some two-track trails to protect big game during crucial periods such as winter.

The area outside of the ACEC would be managed under the multiple-use criteria applicable to the remainder of the Big Sandy Planning Unit.

Wilderness management of 16,280 acres; wilderness management of the entire WSA (27,200 acres); and nonwilderness management are the only alternatives considered. They represent realistic alternatives for management of the values in the Sand Dunes WSA. Other alternatives were not considered realistic or as responsible resource management under the Federal Land Policy and Management Act of 1976.

CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Sand Dunes WSA is characteristic of the semiarid cold desert. Average daytime temperatures for the area range from 60–65° F. in July to 10–15° F. in January, with a growing season of approximately 170 days for grasses.

The area receives approximately 8 to 10 inches of precipitation annually, with less than half in the form of snow. The prevailing winds are generally from the west. Wind speeds normally average 15 mph, but gusts may reach as high as 82 mph preceding strong frontal passages. The highest wind speeds normally occur in late winter and spring.

AIR QUALITY

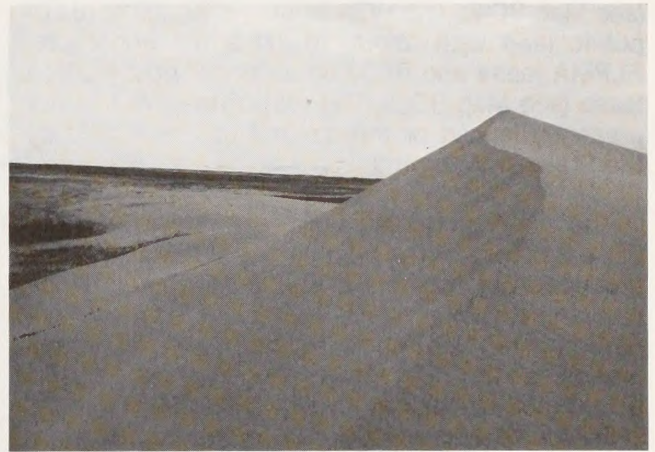
Within the Sand Dunes WSA air pollution levels are low. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) do not exceed allowable standards (Science Applications, Inc. 1980). Particulate matter, spawned by the combination of wind and an arid countryside, results in some degree of “natural” pollution; however, this type of pollution is negligible.

TOPOGRAPHY

The Killpecker Sand Dunes are a large strip of active sand dunes which extend through an east-west gap in the northern end of the Rock Springs Uplift. The gap forms a large funnel for sand moving from Eden Valley eastward across the anticline. The dune belt crosses the Continental Divide south of Steamboat Mountain and continues into the Red Desert Basin. The sand dunes cover approximately 60 percent of the WSA. The proposed action boundaries would contain nearly 100 percent active sand dunes (see Map SD-1).

Elevation of the WSA averages 6,800 feet, but one peak in the northern half of the WSA is 6,970 feet. Individual sand dunes exceed heights of 100 feet. Interdunal areas on the northern and southern extremities contain ponds, grass covered

marshes, and playas. Sparse grasses and sagebrush stabilize dunes in the western fringes of the field.



Dunes may rise over 100 feet.

GEOLOGY

The Sand Dunes WSA is on the northern extremity of the Rock Springs Uplift, which is an anticlinal uplift formed of Cretaceous shale and sandstone units. The Killpecker Sand Dunes are one of the largest active dune fields in North America. The dune field is unidirectional due to prevailing westerly winds. The sequence of active dunes from windward to leeward is dome, transverse, barchan, and parabolic. The dunes correlate to terrace development in Eden Valley and glacial sequences in the Wind River Range. The dunes overlie gravels of the upper Farson terrace and are correlative with early or middle Pinedale glaciation (20,000 years B.C.). The Wasatch and Green River formations of Eocene age are the predominant surface formations of the area. The Wasatch is of fluvial origin and the Green River is of lacustrine origin. (See Glossary for a description of the geologic terms used here.)

SAND DUNES

Mineral Resources

Hydrocarbons are the most valuable potential mineral resource of the WSA. Producing oil and gas fields occur immediately east and southeast of the WSA, with three producing wells within the WSA itself. The WSA is an area of high and moderate development potential for oil and gas (see Map SD-2). The WSA contains 27,200 acres of public land with about 10,000 acres under pre-FLPMA lease and 8,500 acres under post-FLPMA lease (see Map SD-3). The rest of the WSA is not presently leased or the mineral estate is held by the State of Wyoming.

The three producing wells are shown on Map SD-4. Because of the high potential for oil and gas production in portions of the WSA, a preliminary planning decision (MFP-3) was made to exclude portions of the WSA from the proposed wilderness area. (See Map SD-1 for the proposed action WSA boundaries.) In this analysis, the impacts for the WSA will be addressed for both boundaries.

The Sand Dunes WSA is included within two coal designations used for classification purposes. Approximately 4,200 acres of the WSA are included in the former Rock Springs Known Recoverable Coal Resource Area (KRCRA). The coal within the WSA is classified as having unknown development potential for surface or sub-surface mining. The WSA is considered to have low potential for coal development.

Most of the WSA is within an oil shale withdrawal (Executive Order 5327 and Public Land Order 4522). This withdrawal was established to withdraw deposits of oil shale from lease or other disposal and from appropriation under the mining laws relating to metalliferous and nonmetalliferous minerals. The oil shale deposits are reserved for the purposes of investigation, examination, and classification. The oil shale deposits present in the WSA occur in the Green River Formation and are thin and low grade. The WSA is considered to have low potential for oil shale development.

Wind-blown sand covers a large portion of the WSA. This sand is fine to medium-grained and of poor quality for glass making uses. It could be a source of borrow material. However, vast quantities of sand occur in this portion of the Rock Springs District, and there is no development near the WSA that would have a use for this sand as borrow material. The sand resource has a low development potential.

SOILS

Six broad soil types occur in the Sand Dunes WSA. They include (1) dune land; (2) stabilized dunes; (3) moderately deep soils (residual uplands); (4) shallow soils (residual uplands); (5) sandy saline soils (alluvial fans); and (6) alkaline-saline soils. Most of the soil in the Sand Dunes WSA is classified as dune land. See Appendix F for detailed descriptions of these soil types.

WATER RESOURCES

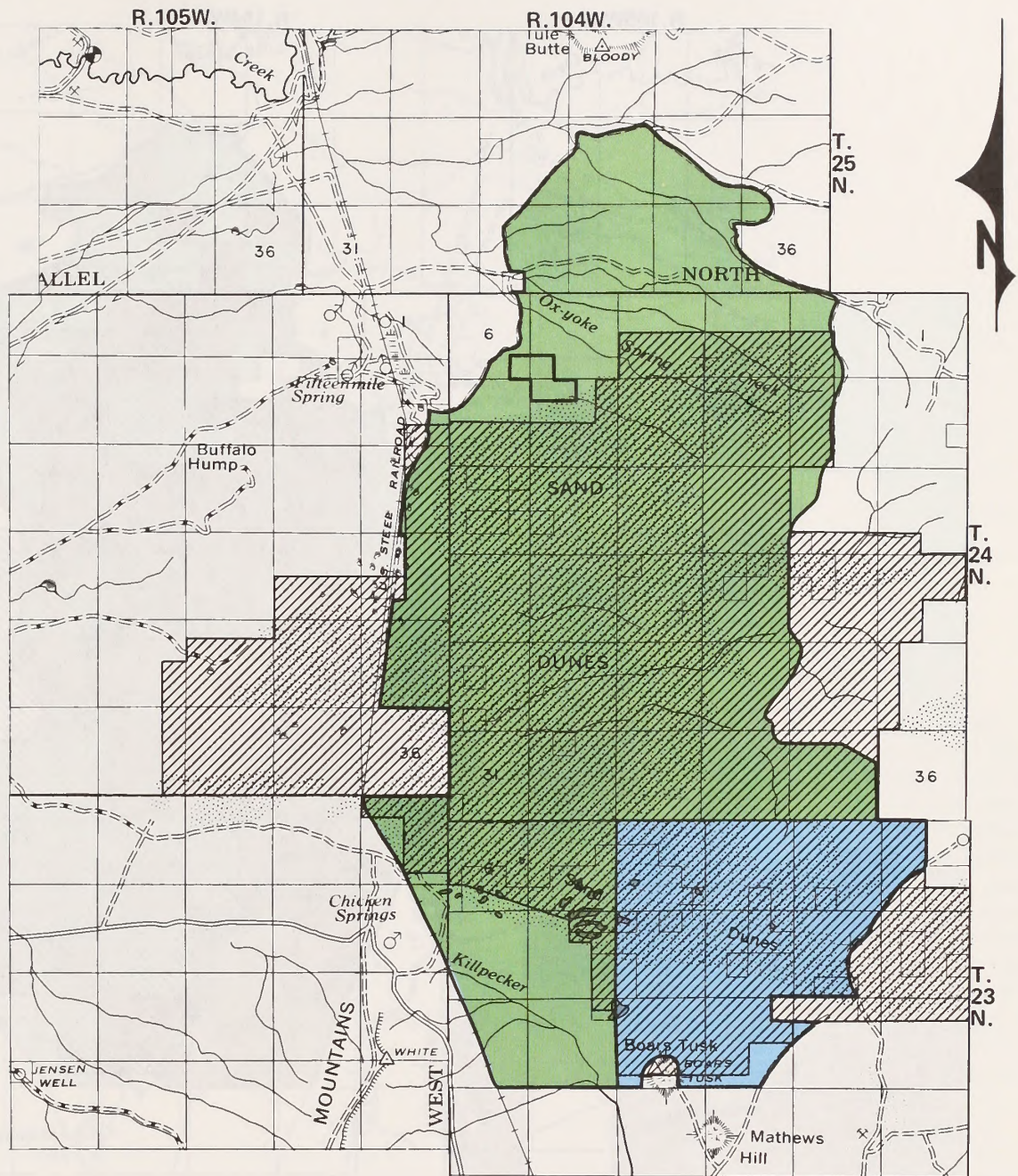
The WSA has no perennial streams located within its boundary. There are numerous intermittent streams which comprise the bulk of water in the area. The source of this water is primarily annual runoff during spring and early summer as a result of snowmelt.




There are three reservoirs found within the WSA boundary, all of which contain water and show signs of usage. The condition of the reservoirs, which were developed for livestock, varies from complete disrepair to functional and operative.

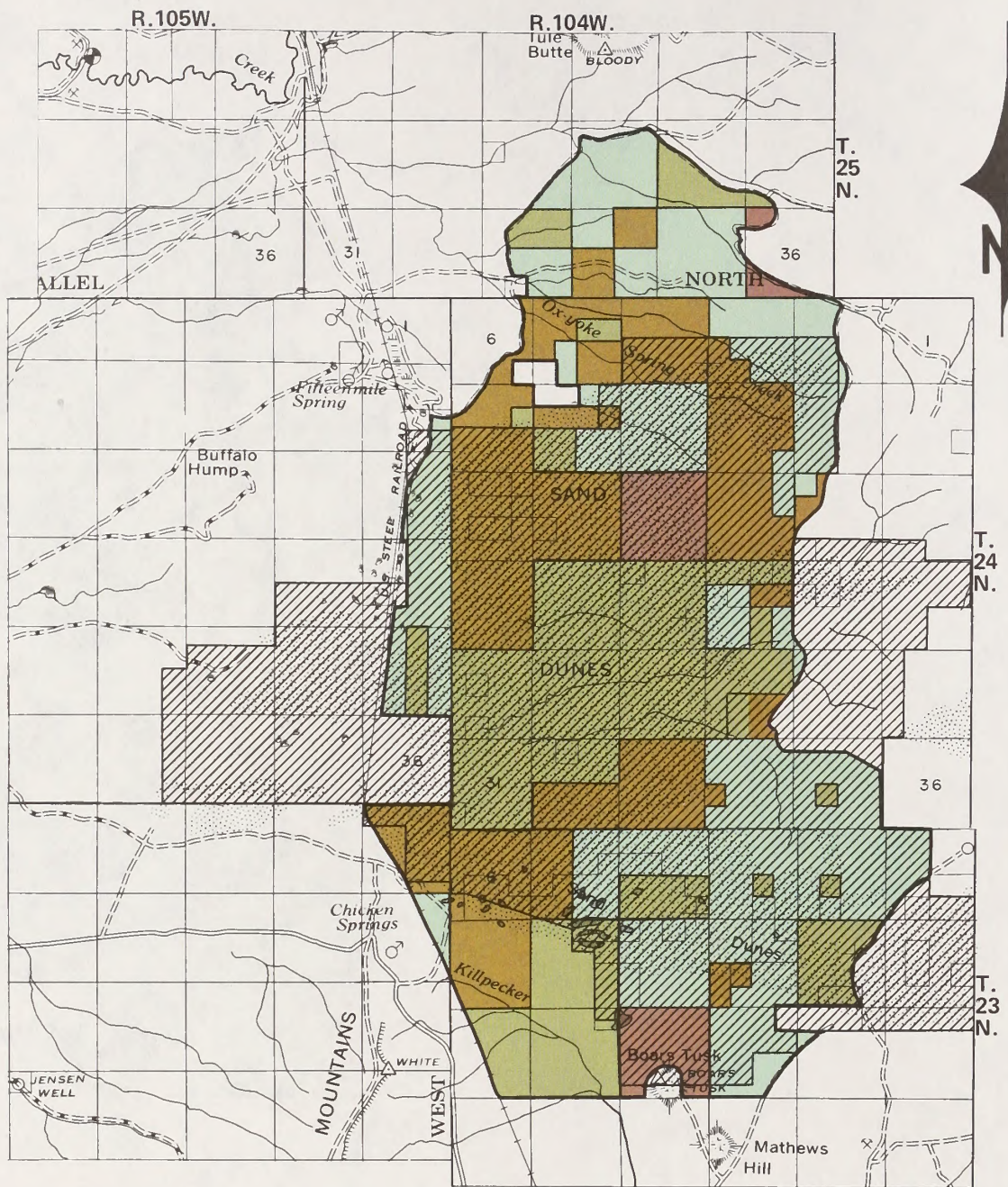
VEGETATION



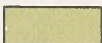


The area within the WSA was included in a range survey conducted in 1976. Vegetation types were mapped and transects run to determine vegetation production. Data from this source were used to describe the vegetation. Table SD-1 describes the approximate acres of each vegetation type within the WSA.

Sand dune areas that have not been stabilized constitute approximately 58 percent of the WSA. These sand dunes are essentially devoid of vegetation. In a few areas, some pioneer type plants are beginning to stabilize the active dunes. Scurfpea, dock, ryegrass, and wheatgrasses are some of the first plants to begin invading the active dunes. Between the dunes are small wet and dry meadows (less than one percent of the WSA). Grass species are common on these sites. Depending on the meadow, common species include sedges, inland saltgrass, and wheatgrasses.



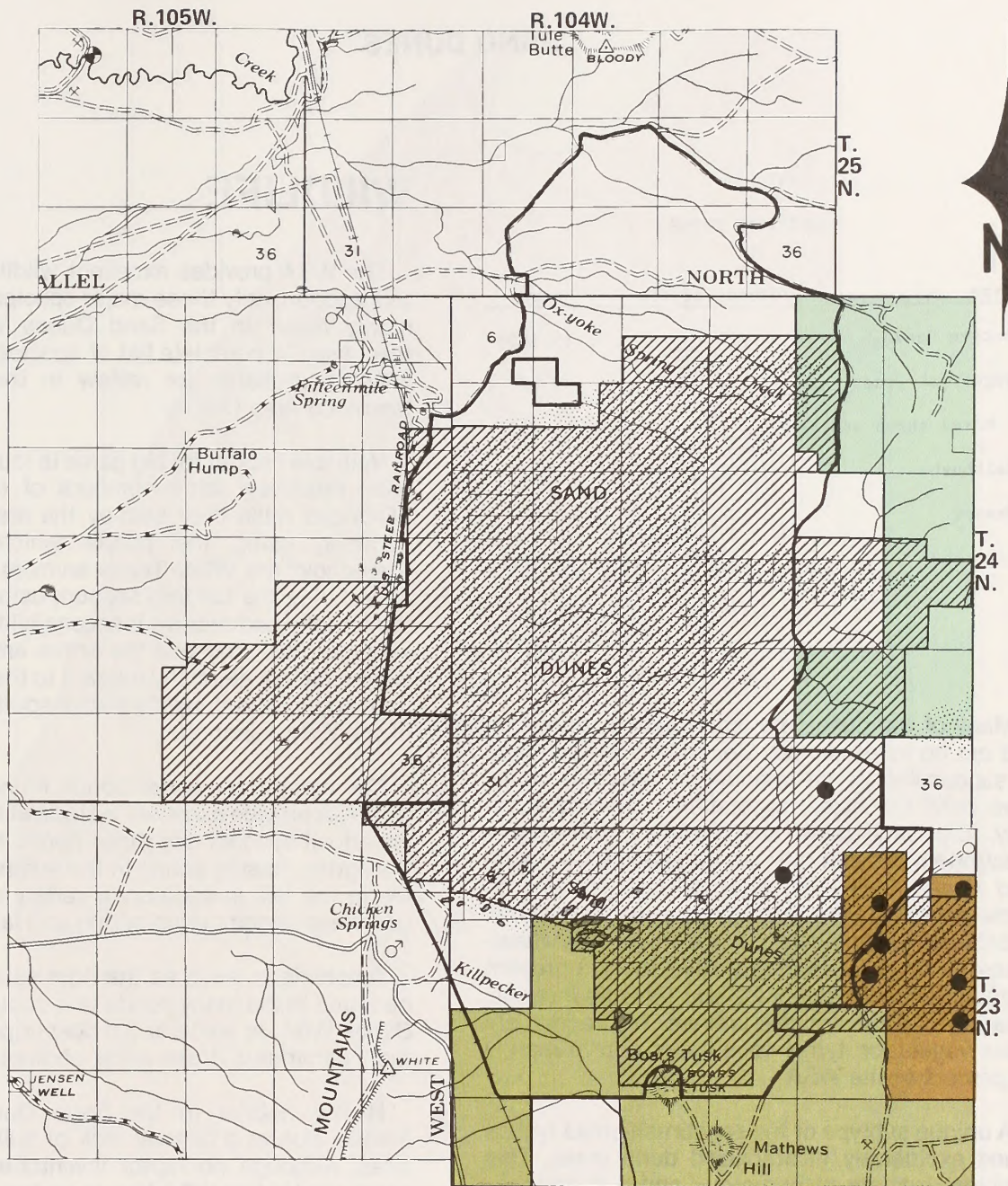
- Wilderness Study Area Boundary
-  Greater Sand Dunes Recreation ACEC
-  High Potential
-  Moderate Potential


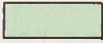




- Wilderness Study Area Boundary
-  Greater Sand Dunes Recreation ACEC
-  Pre-FLPMA Leases
-  Post-FLPMA Leases
-  Not Presently Leased
-  State Minerals

0 1 2 3 4 5 miles
1/2" = 1 mile

Map SD-3
Sand Dunes WSA
OIL AND GAS LEASES



- Wilderness Study Area Boundary
-  Greater Sand Dunes Recreation ACEC
-  Essex Mountain Unit
-  Boars Tusk Unit
-  Nitchie Gulch and Pine Canyon KGS
- Producing Oil and Gas Wells

0 1 2 3 4 5 miles
1/2" = 1 mile

SAND DUNES

Table SD-1
VEGETATION TYPES

Type	Percent of WSA	Acres
Active Sands	58	15,865
Sagebrush-grass	33	9,020
Mixed shrub subtype	1	337
Saltbush	7	1,915
Meadow	1	63
Totals	100	27,200

Many of the dunes are stabilized by vegetation and are no longer active. Depending on the stage of succession or the amount of time the dunes have been stabilized, vegetation varies considerably. Big sagebrush, and Douglas and rubber rabbitbrush are common shrub species on stabilized dunes. Spiny hopsage is also present on some dunes. Common grass species are needle-and-thread, Indian ricegrass, and thickspike wheatgrass. Other grasses or grasslike species present include Sandberg bluegrass and threadleaf sedge. A variety of forbs are also present. The sagebrush-grass vegetation types constitutes approximately 33 percent of the WSA.

A unique subtype of the sagebrush-grass type is found exclusively in stabilized dune areas. This subtype consists of numerous shrub species including Great Basin big sagebrush, rubber rabbitbrush, fourwing saltbush, greasewood, and Douglas rabbitbrush. Grasses and forbs include Montana wheatgrass, creeping wildrye, Indian ricegrass, and scurfpea. This subtype occupies approximately one percent of the WSA.

The saltbush vegetation type constitutes seven percent of the WSA, and is located in the lower elevations. This type ranges from essentially pure stands of Nuttall saltbush to mixed stands of Nuttall saltbush and birdsfoot sagebrush. These stands are quite variable, with associated understory species ranging from nonexistent to very common. Species associated with the saltbush and birdsfoot sagebrush include bottlebrush squirreltail, Indian ricegrass, western wheatgrass, and various forbs.

WILDLIFE

The WSA provides excellent wildlife habitat. In this section, only those major species which commonly occur in the Sand Dunes WSA will be discussed. A complete list of species found in the WSA is available for review in the Big Sandy Resource Area Office.

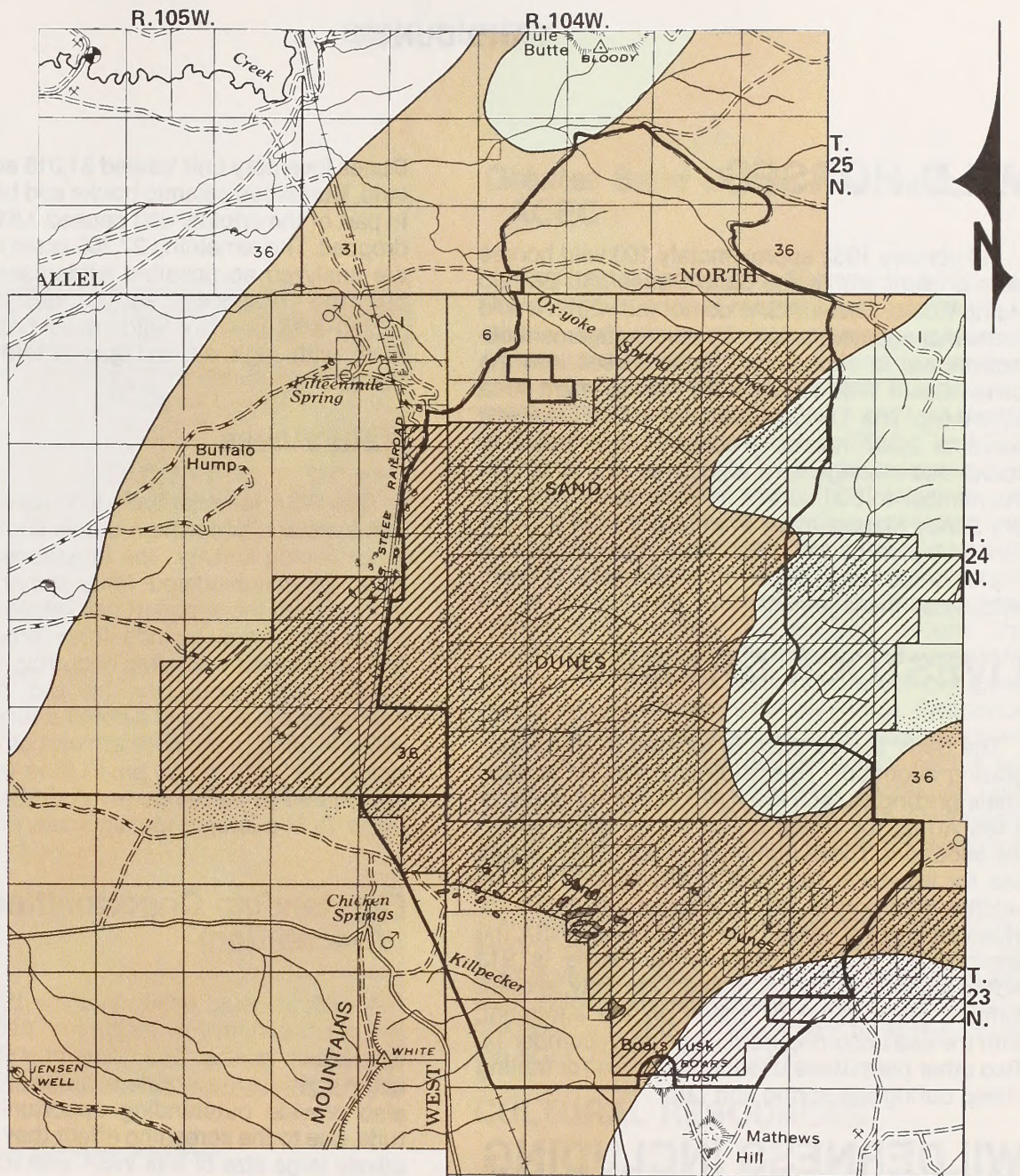
Valuable habitat for big game is found within the area. Relatively large numbers of elk (see Map SD-5) and mule deer occupy the area during the summer, using the ponds which are found throughout the WSA. These animals linger in the area during the hunting season, using the broken topography and relative inaccessibility to their advantage. Deer may use the entire area during the winter, but elk generally migrate to the east. Pronghorn antelope occupy the flatter southern portions of the WSA yearlong.

The many fresh water ponds found throughout the WSA provide excellent waterfowl habitat. Many waterfowl species use these ponds for nesting in the spring, raising young in the summer, and staging in the fall. In addition, a variety of shorebirds use these ponds during spring and fall migrations.

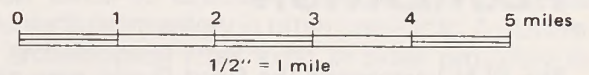
Amphibians, such as the tiger salamander, can be found in the many ponds that occur in the Sand Dunes WSA. In some of the deeper ponds (up to 8 feet), gammarus (fresh water shrimp) are found.

Raptor habitat in the Sand Dunes WSA is limited, due to a general lack of suitable nesting sites. Although no raptor inventories have been conducted in this WSA (due to its low raptor potential), there are two small pockets in the eastern portion which have been identified as having potential habitat.

Three large predator species have been identified as using the WSA including red fox, coyotes, and mountain lions. Red fox habitat is generally limited to the northwestern portion of the WSA. Coyotes are common throughout the WSA. Mountain lions and bobcats also use the area, however, their occurrence is not considered common. Ord's kangaroo rat, which is restricted to dunes habitat (Belitsky 1981), occurs in the area.



- Wilderness Study Area Boundary
- Greater Sand Dunes Recreation ACEC
- Crucial Elk Winter Range
- Elk Summer Range



Map SD-5
Sand Dunes WSA
SAND ELK HERD HABITAT

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WILD HORSES

In February 1982 approximately 100 wild horses were present within the Sand Dunes and Buffalo Hump WSAs. These WSAs do not fall within a wild horse management area because management objectives are to consolidate these horses into the Divide Basin Wild Horse Herd Management Area (WHHMA). The Divide Basin WHHMA presently contains 2,307 horses (February 1982 inventory count) and management objectives are to reduce the number to 500 horses in accordance with the Big Sandy Management Framework Plan and the WHHMA plan by fall 1984. This objective will be implemented regardless of wilderness or non-wilderness management.

LIVESTOCK GRAZING

The Sand Dunes WSA is located in the Sands grazing allotment. This allotment has an approximate grazing capacity of 4,470 AUMs for cattle or 5,486 AUMs for sheep on all public lands within the allotment. These numbers do not reflect actual use for livestock; the total AUMs include use by wildlife, wild horses, etc. and areas unsuitable for livestock grazing. Within the Sand Dunes WSA the approximate grazing capacity for cattle is 913 AUMs and 835 AUMs for sheep. Currently, six permittees graze cattle or sheep on the allotment, with the use occurring from May 1 to December 14. Two other permittees use the allotment for trailing sheep during the spring and fall.

WILDERNESS INCLUDING RECREATION

The BLM inventoried the Sand Dunes area and all contiguous public lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (1978d). On the basis of the intensive inventory, the Bureau determined that the Sand Dunes WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Size

This WSA contains 27,200 acres of public land and 640 acres of state land. The original Sand

Dunes inventory unit totaled 31,016 acres of public land. Numerous seismic tracks and two-track trails in part of the original unit caused 3,816 acres to be dropped. The remaining 27,200 acres of public land are analyzed as possible wilderness in this EIS, but the proposed action analyzes only a 16,280-acre area for wilderness because of conflicts with high oil and gas potential (see Map SD-1).

Naturalness

This WSA is essentially in a natural condition. The spectacular northern dunes show no signs at all of human activity. The intrusions found in the WSA were considered fairly minor and do not detract from the apparent naturalness of the WSA. These intrusions include three producing wells, two abandoned well sites occurring within 50 feet of the WSA boundary, an old corral in the southwestern part, and a deteriorating barbed wire fence located in the northern part of the WSA. The producing wells are on pre-FLPMA leases and are considered to be temporary disturbances allowed under BLM's Interim Management Policy.

Outstanding Opportunities (Recreation)

A person could easily imagine being lost in a sea of sand simply by hiking into one of the many wind-blown basins. The numerous draws, valleys, and ridges in the northern and eastern sections also provide outstanding opportunities for solitude, due to the screening effect they offer. The relatively large size of this WSA with its correspondingly large amount of active sand dunes creates further opportunities for solitude.

Outstanding opportunities for primitive and unconfined recreation are readily available in this WSA. Hiking in the dunes is a strenuous but rewarding experience. Other activities include nature photography—both scenic and wildlife, bird-watching, hunting, and sightseeing.

Off-road vehicle enthusiasts are one of the primary users of the Sand Dunes area. Data on off-road vehicle and hunter use of the WSA is not available; however, field observations indicate that these activities occur frequently.

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Dunes stretching northward.

Supplemental Values

The WSA contains several supplemental values which qualify this area for wilderness study. Ecologically, the most unique feature of the Sand Dunes WSA is the eolian ice-cells that feed pools at the base of many large dunes. These are formed as snow and ice accumulate on the leeward side of the dunes and then are covered by blowing sand. These pools, or ponds, range in depth from six inches to eight feet deep, some being crystal clear and almost void of life, while others are muddy, murky, and alive with tadpoles, salamanders, insects, waterfowl, and various grasses and algae. A very unique wildlife feature of this region is that the dunes presently help support the only herd of desert elk in Wyoming.

Greater Sand Dunes Recreation ACEC

The Greater Sand Dunes Recreation ACEC was designated to protect recreation, scenic, cultural, wildlife, and unique natural system values found in an area covering 38,480 acres, extending east-west across the Killpecker Sand Dunes. This area encompasses 80 percent of the WSA and includes all of its active sand dunes (see Map SD-1). The ACEC management plan (which will be completed in 1983) provides wildlife and cultural resource protections and promotes appropriate recreation use. The ACEC management prescriptions would restrict most off-road vehicle (ORV) recreation to active dune fields (protecting stabilized dunes); restrict ORV activity immediately around the deeper ponds (over one foot deep); and seasonally close some two-track trails to protect big game during crucial periods such as winter. Protection of the Sands elk herd would be of paramount importance to ensure that the herd and its habitat are sustained, promoting long-term recreation and wildlife values unique to this area. Effective protection would involve coordination with the Wyoming Game and Fish Department.

Under nonwilderness management the ACEC portion of the WSA would be managed for its unique values. Under wilderness management the BLM Wilderness Management Policy would take precedence over the management prescriptions of the ACEC management plan.

CULTURAL RESOURCES

The unstable nature of the surface within the WSA tends to obscure archeological resources and surface inventory is often unreliable. A number of archeological sites exist in close proximity to the WSA. These include such notables as the Finley site and the Eden-Farson site (both of which lie to the west). It may be assumed that other sites exist within the WSA. Numerous lithic scatters of artifacts have been found at various points within the WSA.

VISUAL RESOURCES

The Sand Dunes WSA lies within three Visual Resource Management (VRM) classes. The major portion of the WSA is classified as VRM Class II. Small portions of the WSA on the north lie within Class IV, and portions of the southern area lie within Class III. The basic management guidelines

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for these visual resource management classes are described in detail in the District-wide Analysis, Chapter 2, Visual Resources.

NOISE

Existing noise levels within the WSA are low with occasional increases from oil and gas activities. The oil and gas activities do not presently cause much disturbance in the WSA, except for the operation and maintenance of the three producing wells, occasional vehicles passing nearby, and geophysical exploration activities, particularly when explosives are used.

LAND USE CONSTRAINTS

The lands surrounding the Sand Dunes WSA are predominantly public lands administered by BLM. One section of state land is located within the WSA boundaries, and two partial sections of public land where the state has the mineral owner-

ship are also found within the WSA near the boundaries. There are some private lands adjacent to the WSA on the northwest and southeast.

The WSA is located within Sweetwater County and is zoned as an agricultural district. As an agricultural district, there are numerous uses which may be allowed in the area. Some of these uses include: mineral exploration and drilling; oil and gas exploration and development; railway rights-of-way; and transmission lines, stations, and towers. More detailed information on zoning districts is available in the Zoning Resolution of Sweetwater County, Wyoming, and in the District-wide Analysis, Chapter 2, Land Use Constraints.

SOCIOECONOMIC CONDITIONS

This WSA is located in Sweetwater County. The current socioeconomic conditions of Sweetwater County are presented in the District-wide Analysis, Chapter 2, Socioeconomic Conditions.



Sand Dunes looking south to the Boars Tusk.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumptions and guidelines were used for impact analysis:

1. The oil and gas potential of the Sand Dunes WSA is moderate and high. Approximately 43 percent of the WSA is either pre-FLPMA (39 percent) or state leased (3 percent). Extensive exploration and moderate development is anticipated within the WSA.
2. Although coal does occur within the WSA at considerable depth and the southeast corner of the WSA is within the former Known Recoverable Coal Resource Area, the area has been identified as having only low development potential. Therefore, it is assumed that the coal resource will never be mined under any management.
3. Part of the Sand Dunes WSA has been withdrawn to preserve oil shale (Executive Order 5327 and Public Land Order 4522) and the rest of the WSA lies within an area of oil shale occurrence. However, it is assumed that development of this resource will probably not occur, due to its low development potential. The oil shale withdrawal will probably be revoked pending completion of BLM's withdrawal review.
4. The mineral report on the Sand Dunes WSA (BLM 1981g) states that "no locatable resources are known to occur in the WSA." Therefore, it is assumed that locatable minerals (uranium and gold) will never be mined within the area.
5. There are two boundaries analyzed for wilderness in this site-specific analysis. The proposed action boundary is smaller (16,280 acres) and does not include much of the high potential oil and gas area in the southeast portion of the WSA. It also eliminates many of the pre-FLPMA leases in the northern and southeast portions of the WSA. Alternatives 1 and 2 propose larger wilderness boundaries (27,200 acres).

6. Until the State of Wyoming establishes a legally supported policy on the management of state land and leases within the WSA, the constraints to wilderness management posed by these leases are assumed to be similar to the constraints posed by pre-FLPMA leases.

IMPACTS OF THE PROPOSED ACTION (MODIFIED WILDERNESS BOUNDARY—16,280 ACRES)

Air Quality

Under the proposed action there would be no change in the air quality class (currently Class II). However, there may be a minor increase in the total suspended particulates (TSP) and other pollutants within the WSA. This increase, which would not be significant enough to cause a change in air quality class, would primarily be due to increased oil and gas activities on adjacent land and pre-FLPMA and state leases in the WSA.

Topography

Under the proposed action minor adverse impacts would occur to topography. It is expected that the topography within the modified boundaries would remain basically unaltered under the proposed action. The area is almost entirely composed of active sand dunes. Thus, surface-disturbing activities associated with pre-FLPMA and state lease development (i.e., well sites, roads, etc.) would have no effect on the constantly shifting dunes which comprise this modified boundary area. In those stabilized dune areas (outside of the modified boundary area but within the WSA boundaries), surface disturbance would have minor adverse impacts in that the dunes would probably revert to active sand dunes.

Soils

Under the proposed action minor adverse impacts would occur to soils. Most of the WSA is classified as dune land (see Appendix F). By definition this soil type is constantly in motion (mostly

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caused by wind erosion). Because of this, the rate of soil erosion within most of the WSA would remain the same, regardless of the type of disturbance (or lack of it) that takes place.

Those soils within the WSA that are not classified as dune land are composed of stabilized dunes. This type of soil is the same as the dune land soil type, except that it is at a later stage of succession. Surface disturbance on this type of soil resulting from oil and gas activity on pre-FLPMA and state leases, would return the site to a dune land soil type. This would result in minor adverse impacts to soils.

Water Resources

Under the proposed action virtually no impacts would occur to water resources. Any surface disturbing-activities conducted within the modified boundary area on pre-FLPMA or state leases would be required to at least meet nondegradation requirements, thereby mitigating any adverse impacts to water resources. Oil and gas activities on pre-FLPMA leases within the modified boundary area would be required to avoid intermittent streams, ponds, seeps, and reservoirs, as development in such areas would constitute "undue environmental degradation." Outside the modified boundary area, but within the WSA, site-specific mitigation requirements would be applied to avoid impacting the water resources.

Vegetation

Under the proposed action minor adverse impacts would occur to vegetation. Those activities which accelerate vegetation loss (off-road vehicle use, oil and gas activities) would be eliminated or restricted more than at present. Vegetation associated with the many ponds in the WSA would receive the most protection, although grazing will still be permitted. However, minor adverse impacts would still occur to vegetation, due to anticipated oil and gas activity on pre-FLPMA and state leases.

Wildlife

Under the proposed action no impacts would occur to wildlife. It would normally be expected that wilderness designation of the modified boundary area would increase overall big game populations slightly from current levels. Elk populations would be expected to benefit the most from wilderness designation, as this would result in a lesser

amount of disturbing activities. However, the development of pre-FLPMA oil and gas leases outside the modified boundary area would negate the beneficial effects of the exclusion of other types of disturbing activities (mostly off-road vehicle exclusions). Thus, the elk population in the Sand Dunes WSA is expected to remain at current levels.

A lesser amount of disturbing activities (due to wilderness designation) would benefit pronghorn antelope and mule deer populations. However, because of general habitat limitations within the WSA, populations of these species are not expected to increase. While pronghorn antelope may be able to tolerate oil and gas activities on pre-FLPMA leases, the deer population within the WSA may decrease.

Wilderness designation of this modified boundary area would provide some protection for raptors within the WSA. Some protection would also be provided to raptors outside of the modified boundary area. Site-specific mitigation requirements would be applied to disturbing activities.

Amphibians, waterfowl, and other animals associated with the many ponds that occur in the WSA, would not be impacted under the proposed action. Their habitat is limited to the ponds, and these ponds would be afforded protection from disturbing activities. Any oil and gas activities conducted on pre-FLPMA leases within the modified boundary area would be subject to at least nondegradation requirements. Site-specific mitigation requirements would be applied to disturbing activities outside the modified boundary area.

Under the proposed action the large predator species would not be adversely affected by oil and gas activities because these species have low populations and very large ranges.

Wild Horses

Under the proposed action minor adverse impacts would occur to wild horses, due to their planned removal from the WSA. There would be no change in the management of the wild horse herds attributable to wilderness designation. The horses within the WSA will be removed in accordance with the approved Divide Basin Wild Horse Herd Management Plan. In accordance with the special exceptions allowed under the wilderness management policy, authorization would be required to conduct low-level helicopter roundups within the WSA.

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Livestock Grazing

Under the proposed action no impacts would occur to livestock grazing. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease in forage available for livestock.

It is anticipated that the number of range improvements that could be implemented could decrease slightly under the proposed action. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determine that other alternatives (such as horseback) do not exist and wilderness values would not be impaired. This motor vehicle restriction could cause some loss of efficiency in livestock management.

Wilderness Including Recreation

Wilderness Values

Impacts to wilderness values under the proposed action would be moderately adverse, due to allowed oil and gas activities on pre-FLPMA leases. The modified boundaries under the proposed action include a larger proportion of post-FLPMA leased and unleased areas than the original boundaries. Designation of the modified boundary area as wilderness would increase the manageability of the area by nearly eliminating the pre-FLPMA lease conflicts and areas with high oil and gas potential. This increase in manageability would enable greater retention of wilderness values within the modified boundary area. However, in all cases, the wilderness values retained will be a result of the amount of oil and gas that is discovered on pre-FLPMA leases.

Recreation Opportunities

Designation of the modified boundary area as wilderness would have minor adverse impacts on recreation opportunities in the WSA. In the short term, wilderness designation would decrease the amount of hunter-days spent in the WSA. Hunters in the high desert have traditionally used vehicles.

As wilderness designation would exclude most vehicle use, this type of hunting would not occur. Hunting quality would decrease over the long term, due to a decrease in deer population (see Wildlife) and oil and gas disturbances outside the WSA.

Under the proposed action all off-road vehicle use would cease in the modified boundary area; having an adverse impact on off-road vehicle enthusiasts who use part of the modified boundary area extensively. In the short term, the number of hikers would probably increase, due to the increased publicity associated with wilderness designation. However, after this initial increase it would be expected that in the long term, hiker use would decline. This decline would be due to the problems people would encounter in hiking through the high desert, such as scarce water supplies, few shelter areas, etc.

Cultural Resources

Under the proposed action no impacts would occur to cultural resources. Allowed oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800) and mitigation of adverse effects is required prior to construction.

Visual Resources

Under the proposed action moderately adverse impacts would occur to visual resources. Designation of this modified boundary area as wilderness would cause BLM to upgrade the Visual Resource Management class to Class I and manage it as such. However, due to allowed oil and gas activities on pre-FLPMA and state leases, the beneficial impacts expected under wilderness management are eliminated.

Noise

The noise level in the WSA would increase as the amount of oil and gas exploration and development increases, having a moderately adverse impact.

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Typical pond in Sand Dunes WSA.

Land Use Constraints

Wilderness designation of the modified boundary area would not conflict with county zoning, but it could conflict with management of state lands within and adjacent to the WSA.

No developments (factories, plants, etc.) would be permitted within the modified boundary area unless associated with pre-FLPMA lease development. Most rights-of-way for roads, pipelines, etc., would not be allowed unless associated with pre-FLPMA lease development. However, because the modified boundary area has a large amount of unleased and post-FLPMA lease tracts, significantly more constraints (on land use) would be applied under the proposed action.

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives are a composite of the general trend in resource use for all the WSAs.

The proposed action is not expected to have a major impact on the livestock industry. Recreation use of the WSA is expected to incur a minor

decrease, although this is not anticipated to have a significant impact on expenditures in the region.

Under the proposed action moderately beneficial impacts would occur to the oil and gas industry. Designation of the WSA (modified boundary—see Map SD-1) as a wilderness area would serve to eventually eliminate this smaller area from oil and gas exploration and development. Although the Sand Dunes WSA has been classified as having both high and moderate development potential for oil and gas; this smaller wilderness area has considerably less high potential area within its boundaries and is primarily post-FLPMA leased or unleased. The proposed action could preclude development of most of the moderate potential area but would not preclude development of the high potential area. It is assumed that the oil and gas resources in that small portion of the high potential area within the modified boundary wilderness area could probably be extracted through offsite directional drilling. If it is not feasible to obtain the oil and gas resources through directional drilling, then onsite development of these leases would be unavoidable.

Using the original boundaries (see Map SD-1), approximately 43 percent of the Sand Dunes WSA is pre-FLPMA or state leased for oil and gas, and approximately 57 percent of the area (approximately 15,000 acres) is post-FLPMA leased or unleased. Using the modified boundaries (see Map SD-1), 25 percent of the WSA is pre-FLPMA or state leased for oil and gas, and 75 percent (approximately 12,000 acres) is post-FLPMA leased or unleased.

IMPACTS OF ALTERNATIVES 1 AND 2 (WILDERNESS BOUNDARY—27,200 ACRES)

The anticipated impacts of these two alternatives (designation of the entire WSA as wilderness rather than the smaller area in the proposed action) would be the same as those identified for the proposed action except for the following:

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Wilderness Including Recreation

Wilderness Values

Under these alternatives moderately adverse impacts would occur to wilderness values. The larger area proposed for wilderness under these alternatives would favor wilderness values on 10,920 more acres than the proposed action. However, of these acres, only about 3,000 could have mandatory nonimpairment criteria applied to protect the wilderness values. Pre-FLPMA leases cover approximately 43 percent of the area under these alternatives, whereas under the proposed action only 25 percent of the area is pre-FLPMA leased. Therefore, the wilderness area proposed under these alternatives would pose the same management problems as the proposed action but to a greater degree. In addition, the larger wilderness area would encompass more of the high development potential oil and gas area.

Recreation Opportunities

Under these alternatives moderately adverse impacts would occur to recreation opportunities. The larger wilderness area proposed under these alternatives would encompass the heavily-utilized ORV use area in the southeast corner of the WSA. This area is very popular with regional ORV users; excluding ORV use from this area would have an adverse impact on recreation opportunities.

Socioeconomic Conditions

Under Alternatives 1 and 2, there would be a moderate decrease in the amount of visitor-days spent in the Sand Dunes WSA. However, this decrease would not adversely affect the recreation expenditures in the region if recreation use is shifted to substitute areas.

Under Alternatives 1 and 2 minor beneficial impacts would occur to the oil and gas industry. The larger area of post-FLPMA and unleased land proposed for wilderness designation under these alternatives (15,000 acres compared to about 12,000 acres under the proposed action) would have less beneficial impacts to the oil and gas industry. These alternatives would, however, allow considerable development of pre-FLPMA oil and gas leases.

IMPACTS OF ALTERNATIVE 3 (NONWILDERNESS OR NO ACTION)

Air Quality

Under this alternative moderately adverse impacts would occur to air quality. It is expected that there would be an increase in total suspended particulates (TSP) and other pollutants within the WSA. This increase would be caused by increased oil and gas activities within and adjacent to the WSA.

Topography

Under this alternative minor adverse impacts would occur to topography. Under nonwilderness management it is expected that the topography of the WSA would remain mostly unaltered. The WSA is almost entirely composed of sand dunes. Surface-disturbing activities (i.e., construction of well sites, roads, etc.) would not affect the active dunes. Surface disturbance on the stabilized dunes would cause the dunes to revert to an active state, having a minor adverse impact on the topography of the WSA.

Site-specific mitigation requirements would be applied to post-FLPMA lease developments in order to protect those natural system values for which the Greater Sand Dunes Recreation ACEC was designated. This would serve to reduce impacts to topography within the ACEC.

Soils

Under this alternative minor adverse impacts would occur to soils. Most of the WSA is classified as dune land (see Chapter 2, Soils). By definition, this soil type is constantly in motion (mostly caused by wind erosion). Because of this the rate of soil erosion within most of the WSA would remain the same, regardless of the type of disturbance (or lack of it) that takes place.

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Those soils within the WSA that are not classified as dune land are composed of stabilized dunes. This type of soil is the same as the dune land soil type, except that it is at a later stage of succession. Surface disturbance resulting from oil and gas activities on stabilized dunes would cause the dunes to revert to an active state.

Water Resources

Under this alternative virtually no impacts would occur to water resources. Any possible impacts to the water resources from surface disturbing activities would be mitigated by applying site-specific mitigation requirements. Oil and gas activities would be required to avoid intermittent streams, ponds, seeps, and reservoirs.

Vegetation

Under this alternative moderately adverse impacts would occur to vegetation. Under non-wilderness management disturbance to vegetation would increase as oil and gas activities expand into the unleased area within the central portion of the WSA.

Within the Greater Sand Dunes ACEC (see Map SD-1), ACEC management prescriptions would be applied to surface-disturbing activities, in order to conserve vegetation that is essential to the protection of the ACEC values. Vegetation associated with the many ponds in the area would receive the most protection, although grazing would continue.

Throughout the WSA site-specific mitigation requirements, which serve to reduce potential vegetation loss, would be applied to all development activities.

Wildlife

Under this alternative moderately adverse impacts would occur to wildlife. It is expected that wildlife populations in the WSA would decrease from current levels. Although the Greater Sand Dunes ACEC was designated in part to protect wildlife habitat, it is doubtful that the ACEC management prescriptions would be able to afford wildlife full protection from disturbing activities in this active oil and gas area.

Under nonwilderness management it is expected that elk would be affected more than the other big game species. Elk population would decrease from current levels, due to an increase in disturbing oil and gas activities. Because this area is used heavily by the Sands elk herd, disturbing activities could have a serious effect on the entire herd.

A general increase in disturbing activities could cause a slight decrease in the amount of deer occurring within the WSA. However, herd unit populations (which occupy an area much larger than the WSA) should not be affected. Pronghorn antelope population is not expected to change.

It is anticipated that raptor productivity would decrease in the future. This decrease will be caused by increases in general disturbance levels. Raptor nesting sites will be afforded some protection during the nesting season through implementation of ACEC management prescriptions; and, therefore, adult populations should remain at current levels.

Implementation of the nonwilderness alternative would have no impact on the large predator species, because these species have low populations and very large ranges.

Amphibians, waterfowl, and other animals associated with the many ponds that occur in the Sand Dunes WSA, would not be impacted under nonwilderness management. These ponds would be afforded protection from disturbing activities through ACEC management prescriptions.

Wild Horses

Under this alternative minor adverse impacts would occur to wild horses, due to their planned removal from the WSA. There would be no change in management of the wild horse herds. The horses within the WSA will be removed in accordance with the Divide Basin Wild Horse Herd Management Plan.

Livestock Grazing

Under this alternative there would be no change in livestock grazing or management. The amount and type of livestock use would not change from

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the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock.

The number of range improvements in the Sand Dunes WSA could increase if necessary, however, no new improvements are likely. Existing improvements could be maintained by conventional means.

Wilderness Including Recreation

Wilderness Values

Under this alternative highly adverse impacts would occur to wilderness values. Although the management prescriptions of the Greater Sand Dunes Recreation ACEC Management Plan would mitigate many of the adverse impacts associated with oil and gas activity, opportunities for solitude and primitive recreation would be virtually non-existent until oil and gas development was completed in the very long term.

Recreation Opportunities

Under this alternative moderately adverse impacts would occur to recreation opportunities. Although under ACEC management prescriptions most of the area would be closed to off-road vehicle use, on road use will be allowed. Thus, as a result of the anticipated increase in oil and gas development, overall vehicle accessibility in the WSA would probably increase in the future. This factor would tend to increase the number of hunter-days spent in the area, over the short term.

However, due to an anticipated increase in general disturbance and a subsequent decrease in big game population (see Wildlife), hunting quality, over the long term, would decline. Once hunters learn of this decrease in quality, it is anticipated that in the long term, the number of hunter-days would be less than at the present time. Similar reasoning would indicate a decrease in visitor use for photography and wildlife observations would be likely.

In the short term, it is anticipated that the number of hiker visitor-days would not change from present levels. In the long term, as the oil and gas resource is developed, the suitability of the area for hiking would decline, due to the increased number of access roads.

Cultural Resources

Under this alternative no impacts would occur to cultural resources. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800) and mitigation of adverse effects is required prior to construction.

Visual Resources

Under this alternative highly adverse impacts would occur to visual resources. Because of the amount of oil and gas development that is expected in the area under nonwilderness management, the visual resources of the WSA would decline.

Site-specific mitigation measures would be applied to oil and gas activities to protect existing values. However, drilling rigs in dune areas are highly visible.

Noise

The noise level in the WSA would increase as the amount of oil and gas exploration and development increased, having a highly adverse impact.

Land Use Constraints

Nonwilderness management would not conflict with county zoning, nor would it conflict with the management of state lands within and adjoining the WSA. In order to protect those values for which the Greater Sand Dunes ACEC was designated, most structural facilities other than those necessary for development of the oil and gas resource would be disallowed. However, significantly fewer constraints on land use would be applied under nonwilderness management than under the proposed action.

Socioeconomic Conditions

This alternative is not expected to cause a significant impact on the livestock industry. Recreation use of the WSA is expected to incur a moderate decrease; although this is not anticipated to have a significant impact on expenditures in the region.

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Under nonwilderness management oil and gas exploration and development would be allowed on all leases in the WSA, and increased employment, income, revenues, and taxes would result from this development.

Those areas that are presently unleased would be available for leasing. ACEC management prescriptions would be implemented to protect those values (natural system, wildlife, and cultural) for which the Greater Sand Dunes Recreation ACEC was designated. These actions could only be applied to post-FLPMA leases and would be implemented only to control development and would not decrease development.

SUMMARY OF IMPACTS

Site-specific impacts for the Sand Dunes WSA are summarized as follows: Implementation of the proposed action (wilderness, modified boundary) would result in minor adverse impacts to the present natural resource base. Under Alternatives 1 and 2 (wilderness, entire WSA), minor adverse impacts would also occur to the present natural

resource base. Under Alternative 3 (nonwilderness management) moderately adverse impacts would occur to the present natural resource base.

Under the proposed action and Alternatives 1 and 2, moderately adverse impacts would occur to wilderness values. The nonwilderness alternative would result in highly adverse impacts to wilderness values. The adverse impact to wilderness values in all cases is primarily the result of the anticipated oil and gas activities. Recreation opportunities would be adversely affected under the proposed action and all alternatives. The proposed action would have the least adverse impact, with only minor adverse impacts occurring. The other alternatives would result in moderately adverse impacts occurring to recreation opportunities.

Present socioeconomic conditions and the oil and gas industry would be beneficially impacted under the proposed action and all alternatives. The proposed action would have moderately beneficial impacts, Alternatives 1 and 2 would have minor beneficial impacts, and Alternative 3 would have highly beneficial impacts.





Map of the South of England
Scale 1:100,000
Published by the Ordnance Survey

Scale 1:100,000

CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

This WSA is located in northeastern Sweetwater County about 35 miles northeast of Rock Springs (see Map AD-1). The WSA consists of 16,990 acres containing a remnant of the Great Divide Basin-Red Desert Area. The Continental Divide splits within the WSA, creating the Great Divide Basin. Topography varies from the open "washboarded" area of Alkali Draw and its tributaries to Alkali Rim, a steep, rugged area with colorful blue escarpments. Big sagebrush and grass are the dominant vegetation, with saltbush and greasewood common over portions of the area. The WSA provides important habitat for mule deer, pronghorn antelope, and elk.

Key issues considered during the planning process, when the nonwilderness recommendation was made, included unique values of the WSA and the interest and potential for oil and gas development. The oil and gas industry has appealed BLM's decision to make this area a wilderness study area; questioning whether the area met the wilderness criteria. That appeal is under consideration by the Interior Board of Land Appeals.

This site-specific analysis of the Alkali Draw WSA analyzes the impacts of wilderness and non-wilderness management. In all alternatives considered in the District-wide Analysis, the Alkali Draw WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternatives 2 and 3, the WSA would be under non-wilderness management; under Alternative 1 the WSA would be managed as wilderness.

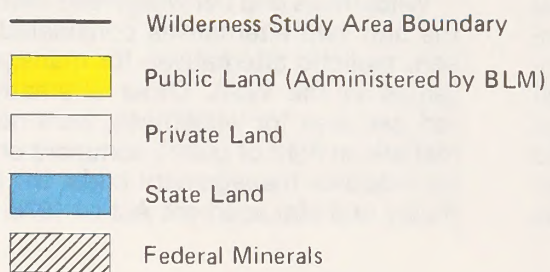
PROPOSED ACTION AND ALTERNATIVE

The proposed action is to recommend to the President, via the Secretary of the Interior, that this

WSA not be designated wilderness. Under the proposed action the WSA would be managed under the guidelines of the Big Sandy Management Framework Plan (MFP). The area would be managed under the same multiple-use criteria applied to the remainder of the Big Sandy Planning Unit. Specific decisions from the MFP may be obtained from the Big Sandy Resource Area Office and key decisions are listed on Table D-3 in the District-wide Analysis. No boundary changes or other special designations are proposed.

The alternative to the proposed action is to manage the Alkali Draw WSA as wilderness. The implications of wilderness management are summarized in Table D-1 of the District-wide Analysis. Under wilderness management many of the activities allowed under MFP management would be restricted or curtailed. Wilderness management would provide increased protection of the wilderness values as well as other natural resources. However, pre-FLPMA oil and gas leases cover 75 percent of the WSA and exploration drilling is currently taking place within the southwestern boundary. It appears highly probable that at least a portion of the WSA will be within a producing gas field. For these reasons, even the wilderness alternative would include moderate oil and gas activities.

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values in the WSA. Other alternatives such as reduced area for wilderness, were not considered realistic in light of public comment or as responsible resource management under the Federal Land Policy and Management Act of 1976.



Map AD-1
Alkali Draw WSA
LAND AND MINERAL STATUS

CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Alkali Draw WSA is characteristic of the semiarid cold desert. Average daytime temperatures for the area range from 60–65° F. in July to 10° F. in January, with a growing season of approximately 165 days for grasses.

The area receives approximately 8 to 10 inches of precipitation annually, with less than half in the form of snow. The prevailing winds are generally from the west. Wind speeds normally average 15 mph, but gusts may reach as high as 82 mph preceding strong frontal passages. The highest wind speeds normally occur in late winter and spring.

AIR QUALITY

Within the WSA air pollution levels are low. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) do not exceed

allowable standards (Science Applications, Inc. 1980). Particulate matter, spawned by the combination of wind and an arid countryside, results in some degree of “natural” pollution; however, this type of pollution is negligible.

TOPOGRAPHY

The Alkali Draw WSA is a relatively undisturbed portion of the Great Divide Basin-Red Desert Area. This is a shallow depression nearly 100 miles long from east to west and a little more than 50 miles wide. The basin has interior drainage only, and is literally perched on the Continental Divide. The major draw and tributary washes, draining eastward from the Bush Rim and Steamboat Mountain portions of the Continental Divide, create a “washboard” topographic effect. The southern portion of the WSA is dominated by Alkali Rim. Hoodoos (natural columns of eroded sedimentary rock in fantastic forms) occur occasionally in the WSA. Elevations in the WSA range from 7,000 feet in Alkali Draw in the north, to 7,600 feet near Freightier Gap in the south.



Hoodoos in Alkali Draw WSA.

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GEOLOGY

Fluviatile rocks of Eocene age (the Wasatch Formation) outcrop over most of the area. Unexposed rocks include about 25,000 feet of sedimentary rocks which range in age from Paleocene to Cambrian overlying the crystalline Precambrian basement.

Mineral Resources

Hydrocarbons are the most valuable potential mineral resources of the Alkali Draw WSA. Extensive drilling activity has been conducted adjacent to the southern portion of the WSA (see Map AD-2). Woods Petroleum Corporation has a producing well (shut-in) just inside the southwest boundary of the WSA and is drilling a well one-half mile within the western boundary. Woods Petroleum also has a producing well one-half mile outside of the southwest boundary. Mineral industry interest and producing wells indicate that this area has potential for oil and gas development. Part of the WSA's southern portion lies with a Known Geologic Structure (KGS). Nearly all of the WSA is covered by pre-FLPMA leases for oil and gas (see Map AD-3). No other mineral resources are known to occur within the WSA.

Paleontological Resources

A single documented fossil vertebrate site has been found in the Alkali Draw and South Pinnacles WSAs (McGrew and Bown 1976; see District-wide Analysis, Chapter 2, Paleontological Resources). Potential for other finds exists in these WSAs.

SOILS

Six broad soil types, with relatively equal distribution, occur in the Alkali Draw WSA. They include: (1) moderately deep soils; (2) sandy soils; (3) heavy saline soils; (4) steep shallow soils (canyons and terrace scarps); (5) shallow residual upland soils; and (6) shallow soils (steep mountain slopes). See Appendix F for detailed descriptions of these soil types. Erosion susceptibility classes within the WSA range from moderate to severe, indicating identified erosion problems.

WATER RESOURCES

The Alkali Draw WSA has no perennial streams located within its boundaries. However, there are intermittent streams which comprise the bulk of water in the area. The source of this water is primarily annual runoff during spring and early summer as a result of snowmelt. There are no water wells or reservoirs located within the WSA.

VEGETATION

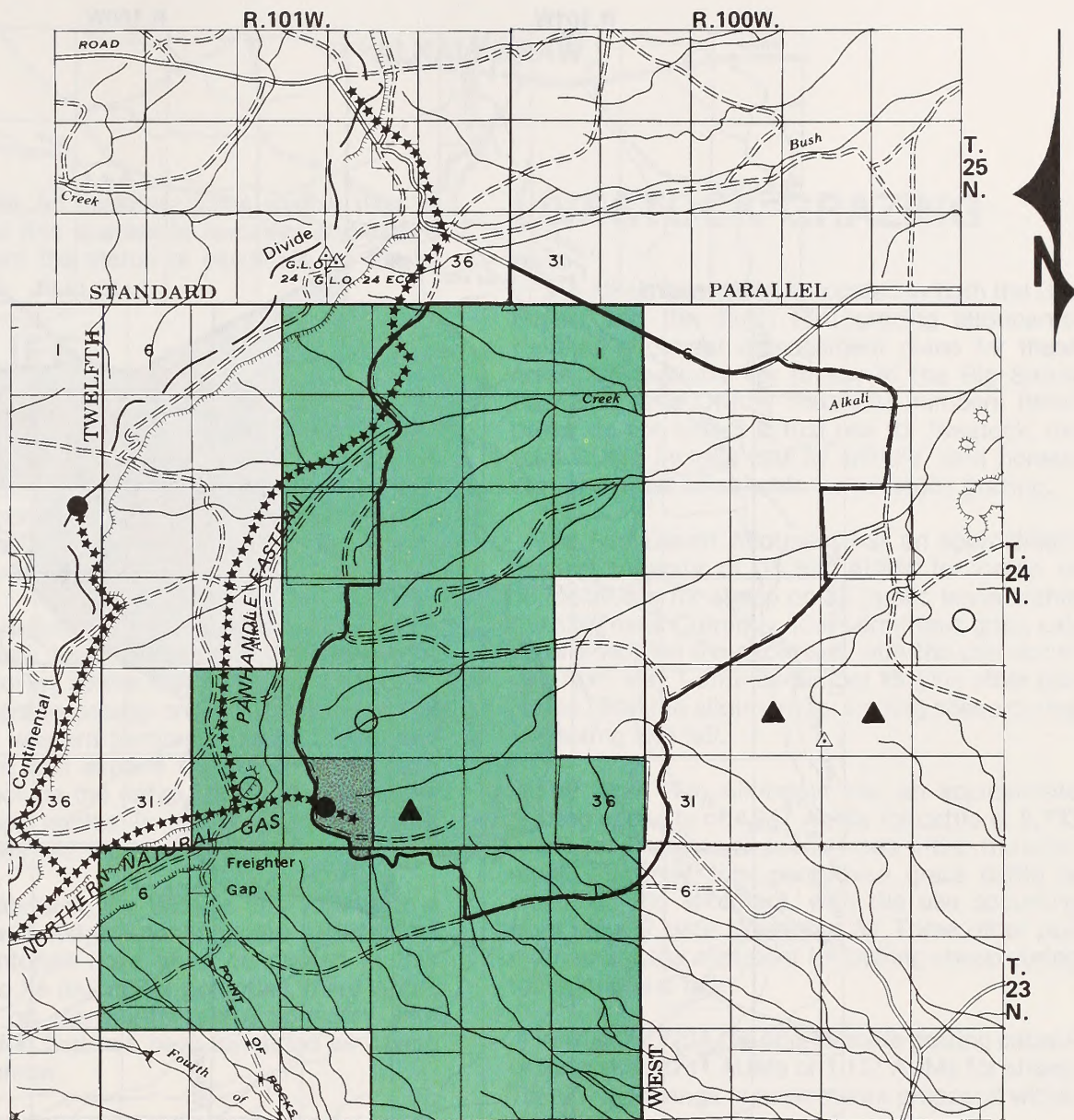
The area within the WSA was included in a range survey conducted in 1976. Vegetation types were mapped and transects run to determine vegetation production. Data from this source were used to describe the vegetation.

Big sagebrush is the dominant vegetation community over much of the area. The most common grass species associated with big sagebrush are thickspike wheatgrass, Indian ricegrass, Sandberg bluegrass, needle-and-thread, and bottlebrush squirreltail. A variety of annual and perennial forbs are present seasonally.

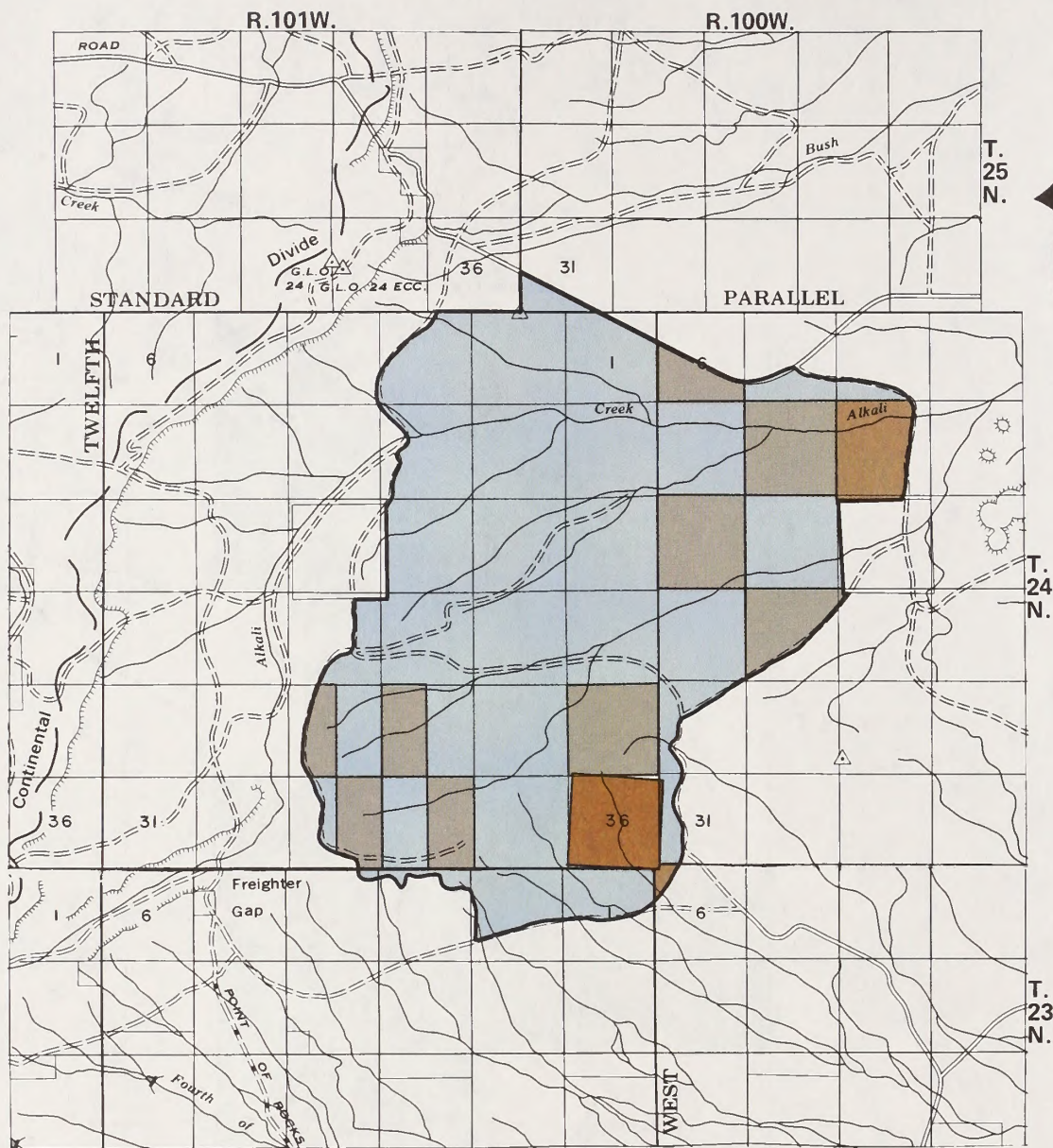
The saltbush vegetation type is common over much of the area. Nuttall saltbush is the dominant plant species. Birdsfoot sagebrush is present in the saltbush and in places, completely replaces the saltbush. The most common plants associated with this type are bud sagebrush, Indian ricegrass, bottlebrush squirreltail, and western wheatgrass. A variety of annual and perennial forbs also occur in this type.

The greasewood type is common along the major drainages. Black greasewood is the dominant species with varying amounts of big sagebrush, rubber rabbitbrush, and Nuttall saltbush. Understory species present are Indian ricegrass, bottlebrush squirreltail, Nuttall alkali grass, basin wildrye, and a variety of forbs.

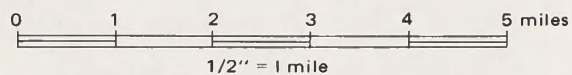
The large seeded bladderpod (*Lesquerella macrocarpa*), a candidate for proposal as a threatened species (*Federal Register*, Volume 45, No. 242, 15 December 1980), is located along the WSA's western boundary on bentonitic clays. It is a member of the mustard family and has a biennial



- Wilderness Study Area Boundary
- ***** Proposed Pipelines
- ▲ Approved Application for Permit to Drill (Woods Petroleum)
- Currently Drilling (Woods Petroleum)
- Producing Well (Woods Petroleum)
- Treasure Unit
- Known Geologic Structure



- Wilderness Study Area Boundary
- Pre-FLPMA Leases
- Post-FLPMA Leases
- Not Presently Leased
- State Minerals



Map AD-3
Alkali Draw WSA
OIL AND GAS LEASES

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growth cycle. An inventory completed in 1981 indicated that this species is sensitive and will be delisted from the status of candidate for threatened status.

WILDLIFE

The Alkali Draw WSA provides good wildlife habitat. In this section only those major species which commonly occur in the WSA will be discussed. A complete list of species found in this WSA is available for review in the Big Sandy Resource Area Office.

Valuable habitat for mule deer and elk is found within the area. Mule deer occupy the entire WSA yearlong, moving to the northern boundary during severe winters to occupy crucial winter range. Elk occupy the western portions of the WSA during the summer, and expand their range during the winter to include the entire area. Valuable pronghorn antelope habitat is found within the WSA; these animals use the area yearlong.

Raptor habitat in the WSA is limited, due to a general lack of suitable nesting sites. Although no raptor inventories have been conducted in this WSA (due to its low raptor potential), there is one small area on the northwestern boundary with steeper bluffs, that has been identified as having potential habitat.

Two large predator species, coyotes and mountain lions, have been identified as using the WSA. Coyotes are common throughout the WSA. Bobcats and mountain lions also use the area, however, their occurrence is not considered common.

WILD HORSES

The WSA is within the Divide Basin Wild Horse Herd Management Area (WHHMA) (see District-wide Analysis, Chapter 2, Map D-8). An inventory in February 1982 indicated that there are 2,307 horses in the WHHMA. The management objective for the WHHMA is to reduce the numbers to 500 through BLM roundups by fall 1984. Visitors to the WSA can expect to see herds in the area, especially in the summer. During the winter many of the horses move to the southern portion of the WHHMA, south of the WSA boundary.

LIVESTOCK GRAZING

The Alkali Draw WSA is located in both the Red Desert and the Bush Rim grazing allotments. Detailed allotment management plans for these areas are available for review in the Big Sandy Resource Area Office. The AUM numbers listed below do not reflect actual use for livestock; the total AUMs include use by wildlife, wild horses, etc., and areas unsuitable for livestock grazing.

The Red Desert Allotment has an approximate grazing capacity of 15,391 AUMs for cattle or 18,756 AUMs for sheep on all public lands within the allotment. Currently, four permittees graze cattle or sheep on the allotment, with the use occurring from May 1 until December 15. One other permittee uses the allotment for trailing sheep during the spring and fall.

The Bush Rim Allotment has an approximate grazing capacity of 4,947 AUMs for cattle or 6,733 AUMs for sheep on all public lands within the allotment. Currently, four permittees graze cattle or sheep on the allotment, with the use occurring from May 12 until November 30. Three other permittees use the allotment for trailing sheep during the spring and fall.

Within the WSA the approximate grazing capacity for cattle is 711 AUMs or 1,117 AUMs for sheep. There are no range improvements proposed within the WSA.

WILDERNESS INCLUDING RECREATION

The BLM inventoried the Alkali Draw area and all contiguous public lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory, the Bureau determined that the Alkali Draw WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Size

This WSA contains 16,990 acres of public land. An additional 640 acres of state land remain within

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the southeast corner of the WSA. Originally this WSA was two inventory units containing 22,169 acres of public land. During the intensive inventory phase, field investigations reduced this acreage to its present 16,990 acres of public land.

Naturalness

This WSA is essentially in natural condition. The manmade intrusions in the WSA consist of nine two-track trails and three well sites. At the time of the wilderness inventory, the two-track trails and one abandoned well site were substantially unnoticeable and undergoing natural revegetation. The other two well sites are temporary disturbances allowed under BLM's Interim Management Policy.

Outstanding Opportunities (Recreation)

The vastness of this WSA along with the "washboard" topographic effect contribute to outstanding opportunities for solitude. Several persons could be in the WSA and not be aware of each other due to the topographic screening provided by the numerous draws or canyons.

Splendid opportunities for primitive and unconfined recreation are available within this WSA. These include horseback riding, hiking, camping, photography, and sightseeing for botanical, zoological, and geological features. Some small caves are also available for recreational opportunities. The interesting and beautiful topographic and geologic features (rims and cliff escarpments) offer challenging scenic hikes and nontechnical climbing opportunities.

Supplemental Values

Ecological, geological, scientific, educational, scenic, and historical supplemental values enhance the wilderness characteristics of the WSA. Paleocene fossils, largely snails, clams, and leaves, can be seen in several layers of geologic strata, suggesting a former riparian habitat. The blue and yellow colorations associated with the escarpments, as well as sandstone formations, invite geologic exploration.

This WSA is a relatively rare, undisturbed remaining portion of the Red Desert where scientific studies can be accomplished. The Continental

Divide splits within this WSA, creating a basin where the waters are totally contained within the province.

CULTURAL RESOURCES

The Alkali Draw WSA has not undergone a cultural resource inventory. Until further cultural information is available, any prehistoric activities that might have occurred in the area cannot be addressed due to lack of data.

The Point of Rocks-South Pass Stage Road forms a portion of the northwest WSA border. This route dates to approximately 1868-1900 when it was used to ferry miners and freight to and from South Pass gold mining district. Also present are the carvings of a sheep herder, which date to the beginning of this century and illustrate his many hours of probable solitude.

VISUAL RESOURCES

This WSA is classified as Visual Resource Management (VRM) Class III. The basic management guideline for this VRM class is described in detail in the District-wide Analysis, Chapter 2, Visual Resources.

NOISE

Existing noise levels within the WSA are low with occasional increases from two sources: oil and gas activities and the U.S. Air Force Strategic Air Command's low-level training flights for B-52 bombers. The latter occurs infrequently and the chances of being in the WSA during an overflight are slight. The oil and gas exploration, drilling, and development activities presently occurring in the WSA result in increased noise levels.

LAND USE CONSTRAINTS

The lands surrounding the Alkali Draw WSA are predominantly public lands administered by BLM. There are some state sections adjacent to the WSA on the north and west. An additional 640 acres of state land is within the southeast corner of the WSA.

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The WSA is located within Sweetwater County and is zoned as an agricultural district. As an agricultural district, there are numerous uses which may be allowed in the area. Some of these uses are: mineral exploration and drilling; oil and gas exploration and development; railway rights-of-way; and transmission lines, stations, and towers. More detailed information on zoning districts is available in the Zoning Resolution of Sweetwater County, Wyoming, and in the District-wide Analysis, Chapter 2, Land Use Constraints.

Panhandle Eastern proposes to cross a one-half mile long area in the western portion of the WSA

with an eight-inch gas pipeline; this would require a 50-foot right-of-way. However, construction of the proposed pipeline has been indefinitely postponed as of this writing.

SOCIOECONOMIC CONDITIONS

This WSA is located in Sweetwater County. The current socioeconomic conditions of Sweetwater County are addressed in the District-wide Analysis, Chapter 2, Socioeconomic Conditions.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action alternative, mining impacts would occur in air quality. There would be no impact to the area proposed wilderness area and other impacts would be less than significant.

Topography

Under the proposed action alternative, there would be no impact to the area proposed wilderness area and other impacts would be less than significant.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumption is used for impact analysis:

Although the oil and gas potential of the WSA is unknown, the high industry interest and recent discoveries on the periphery of the WSA indicate that development in at least the southwest corner is highly likely, possibly expanding to as much as half of the WSA. This development would be in the southern portion of the WSA for the most part. However, pre-FLPMA leases (approximately 75 percent of the WSA) dominate the northern portion, and exploration and development would probably occur.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action moderately adverse impacts would occur to air quality. There would be an increase in the total suspended particulates (TSP) and other pollutants within the WSA, due to increased oil and gas exploration and development activities.

Topography

Under the proposed action no impacts to topography are anticipated. Elevations only vary by approximately 600 feet from the lowest to the highest point. Most oil and gas exploration and development activities could be easily mitigated to reduce or eliminate long-term topographical modifications.

Paleontological Resources

Under the proposed action adverse impacts could occur to the paleontological resources. Small mammal and reptile fossils of the area could be disturbed as a result of anticipated oil and gas development in the WSA. The extent of disturbance could range from minor to extensive, depending upon the extent of oil and gas development.

Soils

Under the proposed action moderately adverse impacts would occur to soils. These adverse impacts on soils are largely a result of disturbance associated with oil and gas exploration and development, particularly road construction. The soils in this area are shallow and easily eroded, and the lack of vegetative cover compounds the problem. The steeper slopes within the WSA are highly erodible. Development in these areas could result in significant erosion problems and soil loss.

Water Resources

Under the proposed action minor adverse impacts would occur to water resources. Sediment load during spring runoff would increase slightly as a result of the anticipated increase in disturbed areas. Additional water sources may be developed as a result of the oil and gas exploration wells that would be drilled.

Vegetation

Under the proposed action moderately adverse impacts would occur to vegetation. Some loss of vegetation would occur as a result of the anticipated oil and gas exploration activities. Much of this can be mitigated by reseeding after exploration or production is completed, however, revegetation will be difficult in much of this area.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations

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then become seed sources for further invasions of surrounding newly disturbed areas.

Full development could have an adverse impact on the identified sensitive plant species (*Lesquerella macrocarpa*). It appears probable that most oil and gas development could be allowed with application of site-specific mitigation measures to protect the sensitive plant species.

Wildlife

Under the proposed action highly adverse impacts would occur to wildlife. There would be some loss of habitat as a result of the oil and gas exploration activities. The major impact would be the displacement of animals from their natural use areas due to disturbance. Some of these impacts could be mitigated, but the overall impacts would be adverse to all wildlife species. Oil and gas activities in crucial winter range (elk and deer) would have the greatest adverse impact. This is the time of year when these animals are most susceptible to stress. A significant increase in activity would also displace mountain lions, which are known to use the western portion of the WSA. This is a secretive animal and does not adapt well to man's activities. Raptors nesting on the steeper bluffs in the northwestern portion of the WSA would also be significantly disturbed if activities were conducted nearby during the nesting period.

Wild Horses

Under the proposed action no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Anticipated oil and gas activities would not adversely affect the horses.

Livestock Grazing

Under the proposed action minor beneficial impacts would occur to livestock grazing. This would be due to the possible development of new water sources as a result of oil and gas exploration activities. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock. Any range improvements proposed in the future could be constructed. Vehicle use would be limited to ex-

isting roads and two-track trails, but this would not constrain livestock management, as this is the present practice.

Wilderness Including Recreation

Wilderness Values

Under the proposed action moderately adverse impacts would occur to wilderness values. Implementation of the proposed action would result in the loss of the opportunity to establish this typical example of the Red Desert area of the Great Divide Basin as wilderness. This area would have added to the diversity of the National Wilderness Preservation System. At least half of the natural character of the area would be lost as a result of oil and gas exploration and development activities.

The primitive or wilderness type recreation values and opportunities for solitude would be severely impacted or lost if full development were to occur. If development does not occur, however, these values would remain essentially as they are at present. Although this WSA is almost 17,000 acres in size and oil and gas activity is presently taking place, with even more activity proposed, this activity is concentrated in the southwest portion. It may be possible to allow development in this area without destroying the wilderness potential of a portion of the WSA. The unique scientific assets of the WSA would be devalued if full development occurs.

Individually, most impacts to wilderness values can be mitigated, but when considered in total, extensive development of this area would result in a loss of wilderness character which could not be regained.

Recreation Opportunities

Under the proposed action recreation resources and uses within the WSA would not be significantly impacted. Vehicle use would be limited to existing roads and two-track trails. Currently, there is very little use off of these existing roads and trails. The primary identified recreation uses, hunting and sightseeing, would not be significantly affected.

Cultural Resources

Under the proposed action no impacts would oc-

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cur to cultural resources. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under the proposed action minor adverse impacts would occur to visual resources. Oil and gas exploration and development would not conflict with the existing VRM Class III. The anticipated intrusions would be acceptable with only minor mitigation being necessary.

Noise

The noise level within the WSA would increase moderately as the amount of oil and gas exploration and development activity increases. The lack of dense vegetation over much of the WSA would make any increase in noise noticeable. The southern portion of the WSA has substantial relief, which could serve to reduce noise in this area. U.S. Air Force low-level bomber training runs would continue sporadically over the area.

Land Use Constraints

The proposed action would not conflict with county zoning, and there would be no conflict with the management of the adjoining state lands. The proposed action would not conflict with the proposed route of the Panhandle Eastern pipeline, which would cross a one-half mile area in the western portion of the WSA.

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives are a composite of the general trend in resource use for all the WSAs.

Under the proposed action increases in proprietors' income could accrue to the livestock industry. This would be due to possible increases in livestock production, due to development of new water sources as a result of oil and gas exploration activities.

Under the proposed action there would be no decrease in visitor-days expected in this WSA. Therefore, expenditures for recreational use of the WSA are not expected to change. Hunting and sightseeing, the primary recreation uses, would continue at present levels.

The proposed action would allow oil and gas exploration and development throughout the WSA. Oil and gas industry activity is expected to increase employment, income, revenues, and taxes as a result of exploration and/or development.

IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Under wilderness management minor adverse impact would occur to air quality. Wilderness designation would assist in maintaining existing air quality and other natural resource values. However, because of constraints on BLM wilderness management (see District-wide Analysis, Chapter 1, BLM Wilderness Management Policies), some adverse impacts would occur, largely due to oil and gas activities on pre-FLPMA leases.

There would be an increase in the total suspended particulates (TSP) and other pollutants within the WSA, due to increased oil and gas exploration and development activities.

Topography

Under wilderness management no impacts to topography are anticipated. Elevations only vary by about 600 feet from the lowest to the highest point. Anticipated oil and gas exploration and development activities on pre-FLPMA and state leases could be easily mitigated to reduce or eliminate any long-term topographical modification.

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Paleontological Resources

Under wilderness management moderately adverse impacts to paleontological resources would be expected, due to allowed oil and gas activities on pre-FLPMA leases.

Soils

Under wilderness management minor adverse impacts would occur to soils. If extensive development occurred within the WSA on pre-FLPMA leases, at least nondegradation requirements would be implemented to protect the highly erodible soils within the WSA. In the long term, as activities ceased and facilities were removed, the soils would stabilize, but would never return to their original condition.

Water Resources

Under wilderness management minor adverse impacts would occur to water resources. Sediment load during spring runoff would increase slightly, as a result of disturbance by allowed oil and gas activities on pre-FLPMA leases. Nondegradation and, in some cases, nonimpairment requirements would be applied to protect the water resource values.

Vegetation

Under wilderness management minor adverse impacts would occur to vegetation. Some loss of vegetation would occur as a result of the anticipated oil and gas activities. Much of this could be mitigated by reseeding after exploration or production is completed in the very long term.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Disturbance associated with oil and gas activities could have minor adverse impacts on the identified sensitive plant species (*Lesquerella macrocarpa*). It appears probable that some oil and gas development would be allowed on pre-FLPMA leases, with application of at least nondegradation requirements to protect the sensitive plant species.

Wildlife

Under wilderness management moderately adverse impacts would occur to wildlife. Oil and gas activities on pre-FLPMA and state leases would continue to cause some loss of habitat and displacement of animals in the long term. As oil and gas activities ceased in the very long term, the animals would return as their habitat returned to its former condition. However, it is doubtful that all existing species would return to their former habitat unless activities on the surrounding lands were minimal.

Wild Horses

Under wilderness management no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Anticipated oil and gas activities would not adversely affect the horses. In accordance with the special exceptions allowed under the wilderness management policy, authorization would be required to conduct low-level helicopter roundups within the WSA.

Livestock Grazing

Under wilderness management minor beneficial impacts would occur to livestock grazing. These beneficial impacts would be due to the possible development of new water sources, as a result of oil and gas exploration activities. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock.

If the WSA is designated wilderness, it is anticipated that the number of range improvements that could be implemented would decrease slightly. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determined that other alternatives (such as horseback) do not exist and wilderness values would not be impaired. This motor vehicle restriction could cause some loss of efficiency in livestock management.

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Wilderness Including Recreation

Wilderness Values

Under wilderness management minor adverse impacts would occur to wilderness values in the WSA. Designation of the WSA as wilderness would increase the diversity of the National Wilderness Preservation System by including a typical example of the Red Desert area of the Great Divide Basin.

The natural character of this WSA would, however, be impacted as a result of allowed oil and gas exploration and development on pre-FLPMA and state leases. The amount of exploration and development that actually occurs would determine the extent of impacts to wilderness values. If development is minimal, the existing wilderness character of the WSA would remain essentially intact. If moderate development occurs, moderately adverse impacts would occur to wilderness values in the long term. In the very long term (50 to 100 years), cessation of activities and rehabilitation may allow wilderness values to return.

Recreation Opportunities

Under wilderness management minor adverse impacts would occur to recreation opportunities. Wilderness designation would eliminate the use of vehicles within the WSA. This would decrease hunter use and sightseeing, which are identified as the major recreation uses at present.

The primitive or wilderness type recreation values and opportunities for solitude would be severely impacted or lost if full development of pre-FLPMA leases were to occur, or if development occurred on adjoining lands. If development does not occur, however, these values would remain essentially as they are now.

Cultural Resources

Under wilderness management no impacts to cultural resources would occur. Allowed oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800) and mitigation of adverse effects is required prior to construction.

Visual Resources

Under wilderness management minor adverse impacts would occur to visual resources. The WSA would be redesignated as VRM Class I, designed to ensure that the natural character of the area would be protected. However, allowed oil and gas activities on pre-FLPMA leases and state leases would adversely impact some of the visual values of the WSA.

Noise

The noise level in the WSA would increase as a result of allowed oil and gas activities within and adjacent to the WSA. However, this increase is expected to have only minor adverse impacts. This increase may only be short term, primarily during drilling activities, but could represent a long-term impact if production facilities were installed.

The lack of relief and dense vegetation over the northern portion of the WSA would make any increase in noise noticeable. The southern portion of the WSA has substantial relief which could serve to reduce noise in this area. Negotiations would be initiated with the U.S. Air Force to alter the route of their low-level training flights.

Land Use Constraints

Wilderness management would not conflict with county zoning, but it could conflict with the current management direction on adjoining state lands. Wilderness designation would conflict with the proposed routing of the Panhandle Eastern pipeline, which would cross a one-half mile long area in the western portion of the WSA. If the WSA is designated as wilderness, the pipeline would probably be located outside the area.

Socioeconomic Conditions

Under wilderness management increases in proprietors' income could accrue to the livestock industry. This would be due to the possible development of new water sources as a result of oil and gas exploration activities.

Under wilderness management there would be a minor decrease in the number of visitor-days expected in the WSA, due to a decrease in hunter use and sightseeing, which are the primary recreation uses at present. However, a significant impact is

ALKALI DRAW

not expected on recreation expenditures in the region. Wilderness management would allow development of mineral resources on over 75 percent of the WSA, increasing employment, income, revenues, and taxes.

SUMMARY OF IMPACTS

Site-specific impacts for the Alkali Draw WSA are summarized as follows: Implementation of the proposed action would result in minor to moderately adverse impacts to the present natural resource base. Under wilderness management minor adverse impacts would occur to the present natural resource base. The adverse impacts occurring under the proposed action and the wilderness alternative would occur as a result of increased oil and gas activities, which are anticipated to occur.

Wilderness values would be adversely impacted under the proposed action and the wilderness alternative, due to anticipated oil and gas development. Wilderness management would have less adverse impacts, because oil and gas development would be primarily limited to pre-FLPMA leases. The proposed action would result in moderately adverse impacts and the wilderness alternative would result in minor adverse impacts. Recreation opportunities would not be affected by the proposed action, but wilderness designation would cause minor adverse impacts, due to the elimination of vehicles in the WSA.

Under the proposed action highly beneficial impacts would occur to present socioeconomic conditions and the oil and gas industry. Wilderness designation would also have moderately beneficial impacts on socioeconomic conditions and the oil and gas industry. These beneficial impacts occur because the vast majority of the anticipated mineral resources within the WSA could be developed under wilderness management.



CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

This WSA is located in northeastern Sweetwater County about 35 miles northeast of Rock Springs. The WSA consists of 10,826 acres within the Red Desert area of the Great Divide Basin (see Map SP-1). The otherwise flat topography is broken by an expanse of rimrocks and ridges running east and west across the WSA. Big sagebrush is the dominant vegetation, with grasses and saltbush being common over much of the area. Important habitat for mule deer and elk is found within the WSA.

Key issues considered during the planning process, when the nonwilderness recommendation was made, included the unique values of the WSA and the interest and potential for oil and gas development. Public comment generally supported protecting a portion of the Great Divide Basin, but specific support for this area was limited.

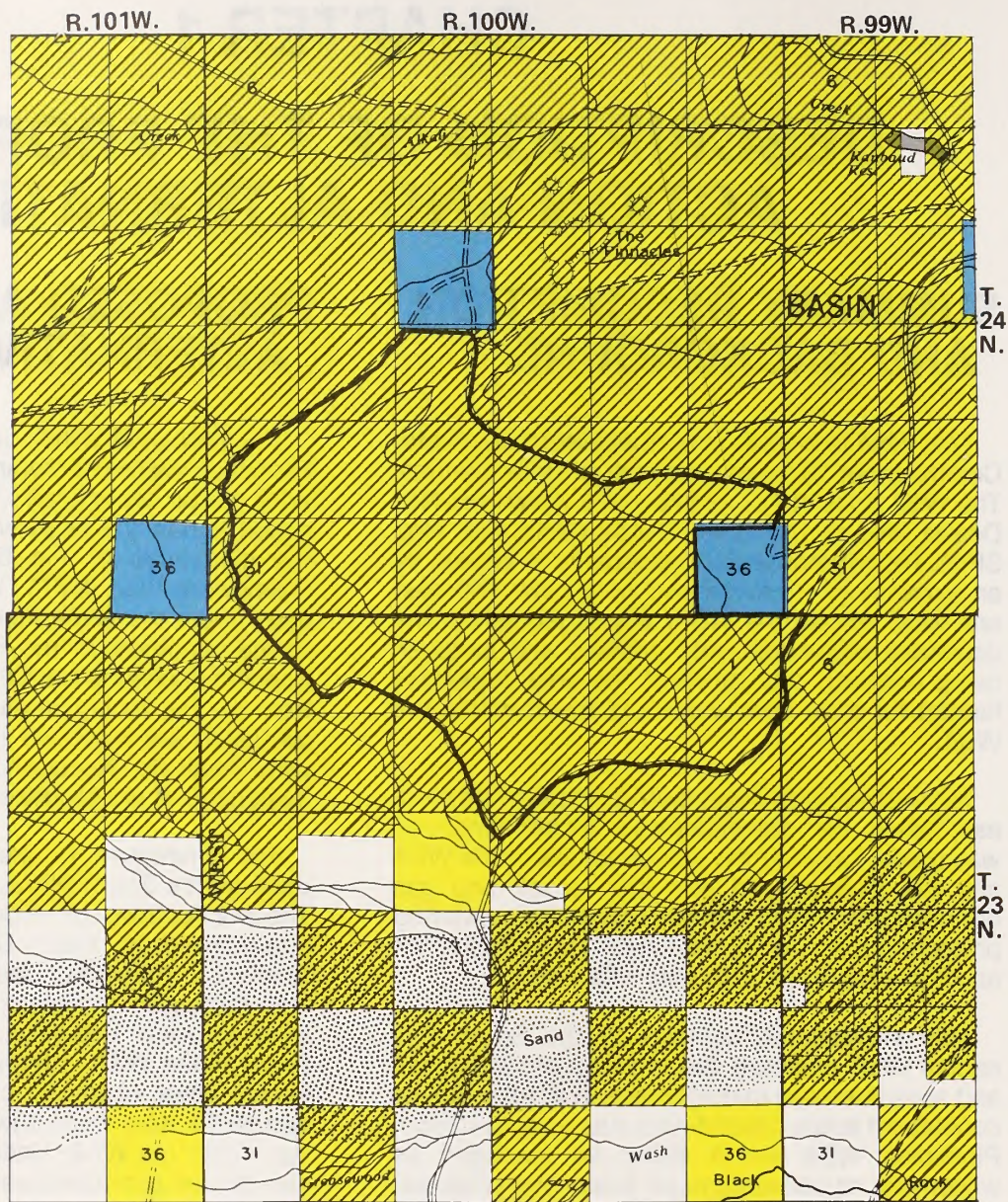
This site-specific analysis of the South Pinnacles WSA analyzes the impacts of wilderness and nonwilderness management. In all alternatives considered in the District-wide Analysis, the South Pinnacles WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternatives 2 and 3, the WSA would be under nonwilderness management; under Alternative 1 the WSA would be managed as wilderness.






PROPOSED ACTION AND ALTERNATIVE

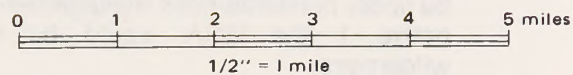
The proposed action is to recommend to the President, via the Secretary of the Interior, that this WSA not be designated wilderness. Under the proposed action the WSA would be managed under the guidelines of the Big Sandy Management Framework Plan (MFP). The area would be managed under the same multiple-use criteria applied to the remainder of the Big Sandy Planning Unit. Specific decisions from the MFP may be obtained from the Big Sandy Resource Area Office, and key decisions are listed on Table D-3 in the District-wide Analysis. No boundary changes or special designations are proposed.

The alternative to the proposed action is to manage the South Pinnacles WSA as wilderness. The implications of wilderness management are summarized in Table D-1 of the District-wide Analysis. Wilderness designation would not provide increased protection of the wilderness and other values in this WSA. Oil and gas industry interest in the WSA is high. Pre-FLPMA oil and gas leases cover nearly 90 percent of the WSA, and two exploratory wells have been approved for drilling within the WSA. Under this alternative extensive oil and gas activities would probably occur in the WSA.

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values in the WSA. Other alternatives, such as reduced area for wilderness, were not considered realistic in light of public comment or as responsible resource management under the Federal Land Policy and Management Act of 1976.



-  Wilderness Study Area Boundary
-  Public Land (Administered by BLM)
-  Private Land
-  State Land
-  Federal Minerals



Map SP-1
South Pinnacles WSA
LAND AND MINERAL STATUS

CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the South Pinnacles WSA is characteristic of the semiarid cold desert. Average daytime temperatures for the area range from 65° F. in July to 10–15° F. in January, with a growing season of approximately 170 days for grasses.

The area receives approximately 8 to 10 inches of precipitation annually, with less than half in the form of snow. The prevailing winds are generally from the west. Wind speeds normally average 15 mph, but gusts may reach as high as 82 mph preceding strong frontal passages. The highest wind speeds normally occur in late winter and spring.

AIR QUALITY

Within the South Pinnacles WSA air pollution levels are low. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) do not exceed allowable standards (Science Applications, Inc. 1980). Particulate matter, spawned by the combination of wind and an arid countryside, results in some degree of "natural" pollution; however, this type of pollution is negligible.

TOPOGRAPHY

The South Pinnacles WSA has an expanse of broken rimrocks and ridges which run east to west across the WSA. This ridge provides the main topographical relief and is an area of rough rocky crags and escarpments. The WSA is within the Great Divide Basin, a shallow depression nearly 100 miles long from east to west and a little more than 50 miles wide. The basin has interior drainage only and is literally perched on the Continental Divide. Elevation varies from 6,722 feet to 7,235 feet.

GEOLOGY

Fluviatile rocks of Eocene age (the Wasatch Formation) outcrop over most of the area. Unexposed

rocks include about 25,000 feet of sedimentary rocks which range in age from Paleocene to Cambrian overlying the crystalline Precambrian basement.

Mineral Resources

The oil and gas potential for the WSA is unknown, although industry interest in the WSA is high. A well is presently being drilled by Woods Petroleum Corporation one mile east of the WSA boundary in section 22, T. 24 N., R. 100 W. (see Map SP-2). Woods Petroleum has proposed and received permission to drill, two wells in the northern portion of the WSA on pre-FLPMA leases. Between 1962 and 1971 several dry holes were drilled north of the Woods Petroleum well and Anadarko Production recently drilled a dry hole one mile east of the WSA's eastern boundary. Another dry hole was drilled one mile west of the WSA's western boundary. There are 15 pre-FLPMA leases (nearly 90 percent of the WSA) and 3 post-FLPMA leases within the WSA (see Map SP-3). Presently, no other mineral resources are known to exist in the WSA.

Paleontological Resources

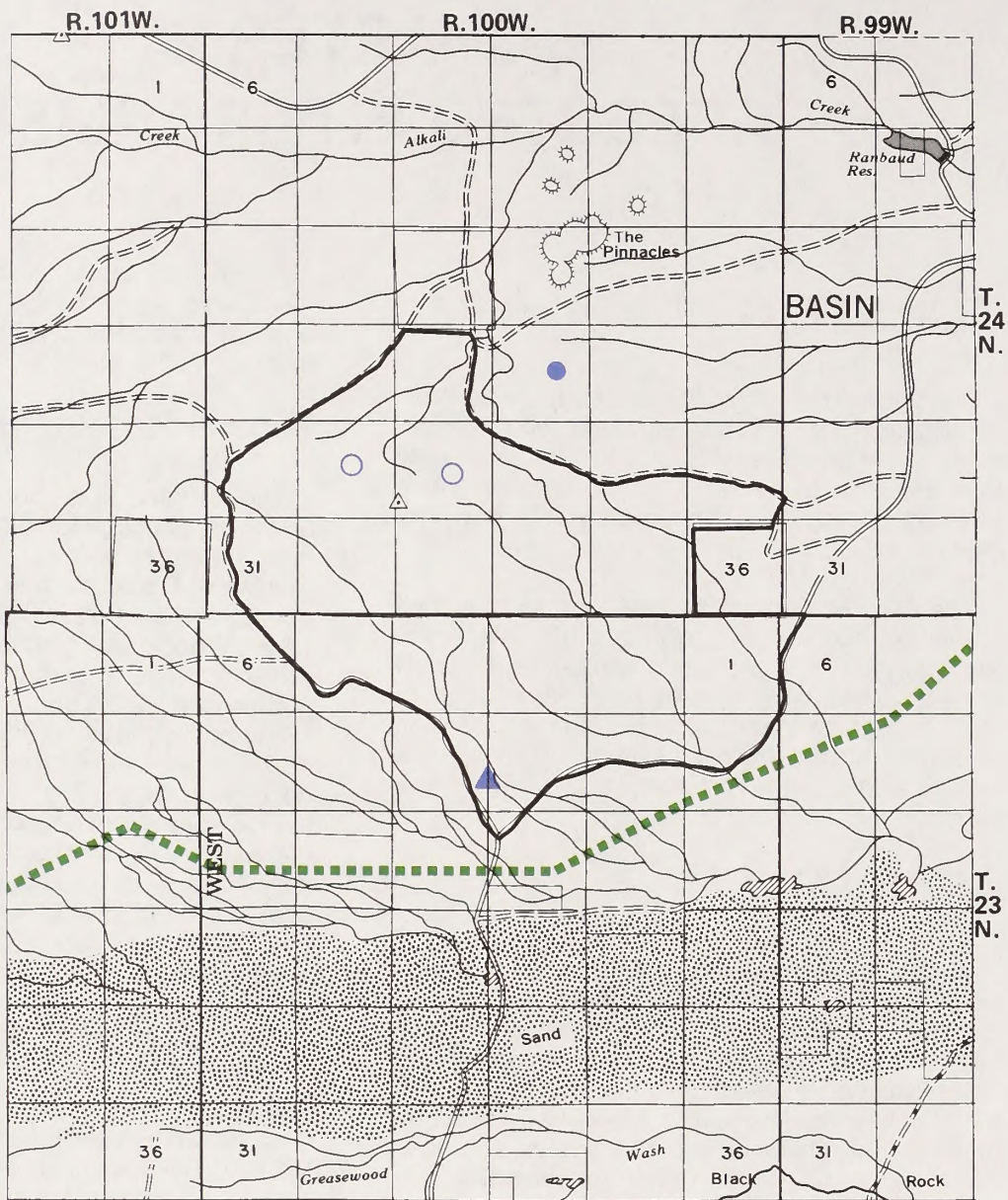
A single documented fossil vertebrate site has been found in the South Pinnacles and Alkali Draw WSAs (McGrew and Bown 1976; see District-wide Analysis, Chapter 2, Paleontological Resources). Potential for other finds exists in these WSAs.

SOILS

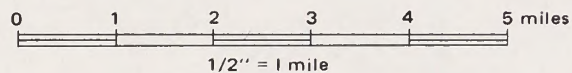
Eight broad soil types occur in the South Pinnacles WSA. They are as follows: (1) heavy saline soils; (2) moderately deep soils; (3) steep shallow soils (canyons and terrace scarps); (4) dune land; (5) stabilized dunes; (6) shallow soils; (7) alkaline-saline soils; and (8) nonvegetated playas. See Appendix F for detailed soil descriptions of these soil types.

WATER RESOURCES

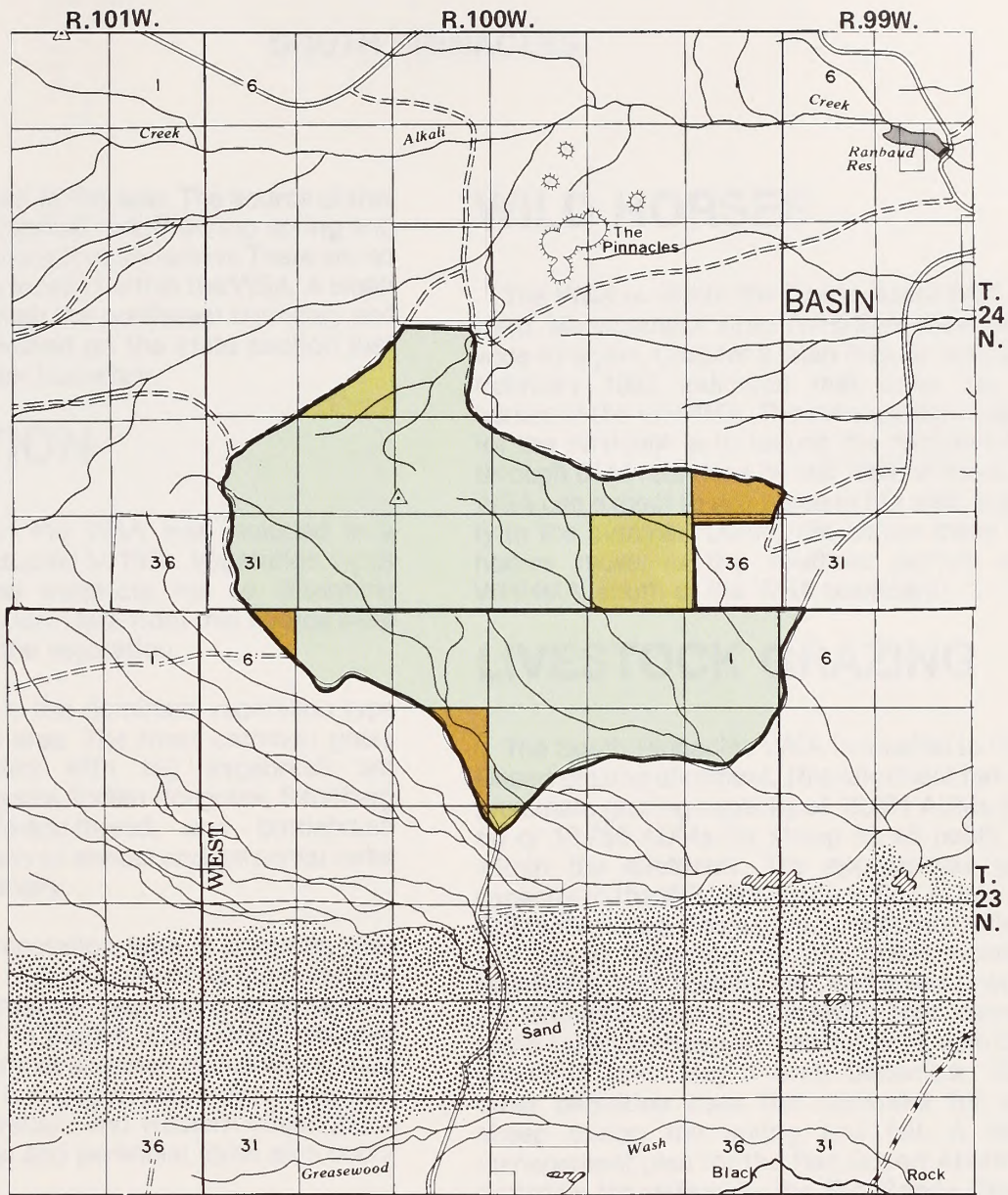
The South Pinnacles WSA has no perennial streams located within its boundaries. There are numerous intermittent streams which comprise



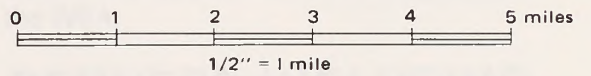
- Wilderness Study Area Boundary
- Proposed Pipeline (Frontier)
- Dry Hole (Davis Oil)
- Approved Applications for Permit to Drill (Woods Petroleum)
- Currently Drilling (Woods Petroleum)



Map SP-2
South Pinnacles WSA
OIL AND GAS ACTIVITY



- Wilderness Study Area Boundary
- Pre-FLPMA Leases
- Post-FLPMA Leases
- Not Presently Leased



Map SP-3
South Pinnacles WSA
OIL AND GAS LEASES



Scale of Miles

0 10 20 30 40 50 60 70 80 90 100

Legend

- Water
- Land
- Population

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the bulk of the water in the area. The source of this water is primarily annual runoff during spring and early summer as a result of snowmelt. There are no wells or reservoirs located within the WSA. A small spring is located near the northwest boundary and a water well is located on the state section just outside the western boundary.

VEGETATION

The area within the WSA was included in a range survey conducted in 1976. Vegetation types were mapped and transects run to determine vegetation production. Data from this source were used to describe the vegetation.

Big sagebrush is the dominant vegetation type over much of the area. The most common grass species associated with big sagebrush are thickspike wheatgrass, Indian ricegrass, Sandberg bluegrass, needle-and-thread, and bottlebrush squirreltail. A variety of annual and perennial forbs are present seasonally.

The saltbush vegetation type is common over much of the area. Nuttall saltbush is the dominant plant species. Birdsfoot sagebrush is present in the saltbush and in places, completely replaces the saltbush. The most common plants associated with this type are bud sagebrush, Indian ricegrass, bottlebrush squirreltail, and western wheatgrass. A variety of annual and perennial forbs also occur in this type.

WILDLIFE

The South Pinnacles WSA provides fair wildlife habitat. In this section, only those major species which commonly occur in the WSA will be discussed. A complete list of species found in this WSA is available for review in the Big Sandy Resource Area Office.

Valuable habitat for big game is found within the area. Mule deer occupy the northern portions of the WSA yearlong. Elk occupy the western portions of the WSA during the summer and expand their range during the winter to include most of the area. Pronghorn antelope habitat is also found within the WSA; these animals use the area yearlong.

Coyotes are common throughout the WSA and bobcats are uncommon residents.

WILD HORSES

The WSA is within the Divide Basin Wild Horse Herd Management Area (WHHMA) (see District-wide Analysis, Chapter 2, Map D-8). An inventory in February 1982 indicated that there are 2,307 horses in the WHHMA. The management objective for the WHHMA is to reduce the numbers to 500 through BLM roundups by fall 1984. Visitors to the WSA can expect to see herds in the area, especially in the summer. During the winter many of the horses move to the southern portion of the WHHMA, south of the WSA boundary.

LIVESTOCK GRAZING

The South Pinnacles WSA is located in the Red Desert grazing allotment. This allotment has an approximate grazing capacity of 15,391 AUMs for cattle or 18,756 AUMs for sheep on all public lands within the allotment. The approximate grazing capacity in the WSA for cattle is 644 AUMs or 779 AUMs for sheep. These numbers do not reflect actual use for livestock; the total AUMs include use by wildlife, wild horses, etc., and areas unsuitable for livestock grazing. Currently, four permittees graze cattle or sheep on the allotment, with the use occurring from May 1 until December 15. One other permittee uses the allotment for trailing sheep during the spring and fall. A detailed management plan for the Red Desert Allotment is available for review in the Big Sandy Resource Area Office. No range improvements are proposed within the WSA.

WILDERNESS INCLUDING RECREATION

The BLM inventoried the South Pinnacles area and all contiguous public lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory, the Bureau determined that the South Pinnacles WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

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Size

This WSA contains 10,826 acres and is entirely public land. The original inventory unit totaled 12,154 acres; however, 1,328 acres were dropped during the intensive inventory phase. The dropped acreage contained a parcel of state land with the original boundary road running through it; a complete section of state land with a well and two roads within it; and a one-eighth mile finger of public land containing seismograph lines.

Naturalness

The South Pinnacles WSA has, for the most part, been spared from the exploration and development activities of man. Six seismograph trails are found within the WSA. Only one trail runs all the way through the midsection of the WSA, and the other two-track trails run along the WSA boundary or only intrude a short distance into the WSA. Only two of the two-track trails are noticeable. The one two-track trail which does enter the WSA is extremely faint, washed out, and considered to be a very minor intrusion. These two-track trails total 6.2 miles within the WSA borders. An abandoned drill site is located approximately 50 yards within the WSA in section 9, T. 23 N., R. 100 W., but is substantially unnoticeable except for the dry hole marker on the site. Overall, most of the WSA shows very few signs of human activity.

Outstanding Opportunities (Recreation)

The rimrock area provides outstanding opportunities for solitude. The numerous pockets and small draws provide excellent opportunities to avoid the sights and sounds of other people.

Although not considered outstanding, primitive and unconfined recreation opportunities do exist, mainly in the rimrock portion of the WSA. These include wildlife observation and photography, rockhounding, horseback riding, hiking, and backpacking.

Two other opportunities available in the WSA may be considered outstanding. Observation and photography of the many geologic ecosites within the rimrock area is the most notable activity. Camping among the rocky crags is the second form of outstanding recreation.



Toadstool formation in South Pinnacles WSA.

Supplemental Values

Wildlife is the primary supplemental value. The WSA contains mule deer, elk, and pronghorn antelope. Some rather large prairie dog towns are located within the WSA.

CULTURAL RESOURCES

The South Pinnacles WSA has not undergone a cultural resource inventory. Until further information is available, any of man's prehistoric and historic activities that might have occurred in the area cannot be addressed due to lack of data.

VISUAL RESOURCES

This WSA is classified as Visual Resource Management (VRM) Class III. The basic management guideline for this VRM class is described in detail in the District-wide Analysis, Chapter 2, Visual Resources.

NOISE

Existing noise levels within the WSA are low with occasional increases from two sources; oil and gas activities and the U.S. Air Force Strategic Air Command's low-level training flights for B-52 bombers. The latter occurs infrequently and the chances of being in the WSA during an overflight are slight. The oil and gas activities do not present-

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ly cause much disturbance in the WSA, except for an occasional truck passing nearby and during geophysical exploration activities, particularly where explosives are used.

LAND USE CONSTRAINTS

The lands surrounding the South Pinnacles WSA are predominantly public lands administered by BLM. There are state lands adjacent to the WSA on the north and east. Frontier Pipeline Company, Incorporated, had proposed constructing a 20-inch pipeline, which would cross the southern portion of the WSA. However, during the preparation of this EIS, the proposed route was dropped and the alternative route was adopted (see Map SP-2).

The WSA is located within Sweetwater County

and is zoned as an agricultural district. As an agricultural district, there are numerous uses which may be allowed in the area. Some of these uses are: mineral exploration and drilling; oil and gas exploration and development; railway rights-of-way; and transmission lines, stations, and towers. More detailed information on zoning districts is available in the Zoning Resolution of Sweetwater County, Wyoming, and in the District-wide Analysis, Chapter 2, Land Use Constraints.

SOCIOECONOMIC CONDITIONS

This WSA is located in Sweetwater County. The socioeconomic conditions of Sweetwater County are presented in the District-wide Analysis, Chapter 2, Socioeconomic Conditions.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumption is used for impact analysis: Although the oil and gas potential of the WSA is unknown, industry interest is high. Nearly 90 percent of the WSA is pre-FLPMA leased, and considerable oil and gas activity has been conducted adjacent to the WSA. It is assumed that extensive exploration and some development would occur under any alternative.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action moderately adverse impacts would occur to air quality. There would be an increase in total suspended particulates (TSP) and other pollutants within the WSA, due to increased oil and gas exploration and possible development activities.

Topography

Under the proposed action no impacts to topography are anticipated. Elevations within the WSA only vary by approximately 500 feet from the lowest to the highest points. Oil and gas exploration and development activities could be easily mitigated to reduce or eliminate any long-term topographical modifications.

Paleontological Resources

Under the proposed action adverse impacts could occur to the paleontological resources. Small mammal and reptile fossils of the area could be disturbed as a result of anticipated oil and gas activities in the WSA. The extent of disturbance

could range from minor to extensive, depending upon the extent of oil and gas development.

Soils

Under the proposed action moderately adverse impacts would occur to soils. These adverse impacts to soils are primarily a result of disturbance associated with oil and gas exploration and development, particularly road construction. The soils in this area are shallow and easily eroded, and the lack of vegetative cover compounds the problem. However, much of the area is, relatively flat; and most of the adverse impacts could be mitigated by rehabilitating disturbed areas.

Water Resources

Under the proposed action minor adverse impacts would occur to water resources. Sediment load during spring runoff would increase slightly, as a result of the anticipated increase in disturbed areas. Additional water sources may be developed as a result of the oil and gas exploration wells that would be drilled.

Vegetation

Under the proposed action moderately adverse impacts would occur to vegetation. Some loss of vegetation would occur as a result of the anticipated oil and gas exploration and development activities. Much of this can be mitigated by reseeded after exploration or production is completed.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Wildlife

Under the proposed action moderately adverse impacts would occur to wildlife. There would be some loss of habitat as a result of the oil and gas exploration and development activities. The major impact would be the displacement of animals from

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their natural use areas due to disturbance. Some of these impacts could be mitigated, but the overall impacts would be adverse to all wildlife species.

Wild Horses

Under the proposed action no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Anticipated oil and gas activities would not adversely affect the horses.

Livestock Grazing

Under the proposed action minor beneficial impacts would occur to livestock grazing. This would be due to the possible development of new water sources, as a result of oil and gas exploration activities. Livestock management would not be adversely affected by the proposed action. Vehicle use would be limited to existing roads and two-track trails, but this would not constrain livestock management, as this is the present practice. Any range improvements proposed for the WSA in the future could be constructed.

Wilderness Including Recreation

Wilderness Values

Under the proposed action highly adverse impacts would occur to wilderness values. Implementation of the proposed action would result in the loss of the opportunity to establish this typical example of the Red Desert area of the Great Divide Basin as wilderness. This area would have added to the diversity of the National Wilderness Preservation System. The natural character of the area would be lost as a result of oil and gas exploration and development activities.

The primitive or wilderness type recreation values and opportunities for solitude would be severely impacted or lost if full development were to occur. If development does not occur, these values would remain essentially as they are at present. Although the WSA contains 10,826 acres, there is so little topographic relief that the opportunity to retain these values is limited. If even minimal development occurred within or adjacent to the WSA, the wilderness recreation opportunities of this area would be severely impacted.

Recreation Opportunities

Recreation resources and uses within the WSA would not be significantly impacted as a result of the proposed action. Vehicle use would be limited to existing roads and two-track trails. Currently, there is very little use off of these existing trails. The primary identified recreation uses, hunting and sightseeing, would not be significantly affected.

Cultural Resources

Under the proposed action no impacts would occur to cultural resources. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under the proposed action minor adverse impacts would occur to visual resources. Oil and gas exploration and development would not conflict with the existing VRM Class III designation. The anticipated intrusions would be acceptable with only minor mitigation being necessary.

Noise

The noise level within the WSA would increase moderately, as the amount of oil and gas exploration and development activity increases. The lack of topographical relief and dense vegetation over much of the area would make any increase in noise noticeable. U.S. Air Force low-level bomber training runs would continue sporadically over the area.

Land Use Constraints

The proposed action would not conflict with county zoning, and there would be no conflict with the management on the adjoining state lands.

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-

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wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives is a composite of the general trend in resource use for all the WSAs.

Under the proposed action increases in proprietor's income could accrue to the livestock industry. This would be due to the possible development of additional water sources as a result of oil and gas exploration activities.

Under the proposed action there would be no impacts on recreation expenditures in the region from recreational use of the WSA. Hunting and sightseeing, the primary recreation uses, would continue at present levels.

The proposed action would allow oil and gas exploration and development throughout the WSA. Oil and gas industry activity is expected to increase employment, income, revenues, and taxes as a result of exploration and/or development.

IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Under wilderness management moderately adverse impacts would occur to air quality. Wilderness management would assist in maintaining existing air quality and other natural resource values. However, because of constraints on BLM wilderness management (see District-wide Analysis, Chapter 1, BLM Wilderness Management Policies), some adverse impacts would occur, largely due to oil and gas activities on pre-FLPMA leases.

There would be an increase in the total suspended particulates (TSP) and other pollutants within the WSA, due to increased oil and gas exploration and development activities.

Topography

Under wilderness management no impacts to topography are anticipated. Elevations within the WSA only vary by approximately 500 feet from the lowest to the highest points. Anticipated oil and gas exploration and development activities on pre-FLPMA leases could be easily mitigated to reduce or eliminate any long-term topographical modifications.

Paleontological Resources

Under wilderness management moderately adverse impacts to paleontological resources would be expected, due to allowed oil and gas activities on pre-FLPMA leases.

Soils

Under wilderness management moderately adverse impacts would occur to soils. Disturbance associated with allowed oil and gas activities on pre-FLPMA leases would cause adverse impacts to soils. At a minimum, nondegradation requirements would be applied to help reduce some of the adverse impacts to the erodible soils in this WSA. In the very long term, as activities ceased and facilities were removed, the soils would stabilize, but they would never return to their original condition.

Water Resources

Under wilderness management minor adverse impacts would occur to water resources. Sediment loads during spring runoff would increase slightly, as a result of the allowed disturbance by oil and gas activities. Nondegradation requirements, and in some cases nonimpairment requirements, would be applied to protect water resource values. The possible development of additional water sources, as a result of oil and gas exploration activities, could still occur.

Vegetation

Under wilderness management moderately adverse impacts would occur to vegetation. Some loss of vegetation would occur as a result of the

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allowed oil and gas exploration and development activities on pre-FLPMA leases. Much of this adverse impact could be mitigated by reseeded after exploration or production is completed.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Wildlife

Under wilderness management moderately adverse impacts would occur to wildlife. Oil and gas activities on pre-FLPMA leases would continue to cause some loss of habitat and displacement of animals in the long term. In the very long term, as oil and gas activities ceased, the animals would return as their habitat returned to its former condition. It is doubtful, however, that all existing species would return to their former habitat unless activities on the surrounding lands were minimal.

Wild Horses

Under wilderness management no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Anticipated oil and gas activities would not adversely affect the horses. In accordance with the special exceptions allowed under the wilderness management policy, authorization would be required to conduct low-level helicopter roundups within the WSA.

Livestock Grazing

Under wilderness management minor beneficial impacts would occur to livestock grazing. This would be due to the possible development of new water sources, as a result of oil and gas exploration activities. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock.

If the WSA is designated wilderness, it is anticipated that the number of range improvements

that could be implemented would decrease slightly. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determined that other alternatives (such as horseback) do not exist and wilderness values would not be impaired. This motor vehicle restriction could cause some loss of efficiency in livestock management.

Wilderness Including Recreation

Wilderness Values

Under wilderness management highly adverse impacts would occur to wilderness values, due to allowed oil and gas activities. Designation of the WSA as wilderness would increase the diversity of the National Wilderness Preservation System by including a typical example of the Red Desert area of the Great Divide Basin.

The natural character of this WSA would be impacted as a result of allowed oil and gas exploration and development activities on pre-FLPMA leases. However, the amount of exploration and development that actually occurs would determine the extent of impact to wilderness values. If development is minimal, the existing wilderness character of the WSA would remain essentially intact. If development is extensive, highly adverse impacts would occur to wilderness values in the long term. In the very long term (50 to 100 years) cessation of activities and rehabilitation may allow wilderness values to return.

Recreation Opportunities

Under wilderness management minor adverse impacts would occur to recreation opportunities. Wilderness management would eliminate the use of motorized vehicles within the WSA. This would decrease hunter use and sightseeing, which are identified as the major recreation uses at present. The primitive or wilderness type recreation opportunities and the opportunities for solitude would be severely impacted or lost if full development of pre-FLPMA leases were to occur, or if development occurred on adjoining lands. However, as wilderness-oriented recreation use of the WSA is minimal at present and is not anticipated to increase, this impact would be minor. If development does not occur, these values would remain intact.

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Cultural Resources

Under wilderness management no impacts would occur to cultural resources. Allowed oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under wilderness management minor adverse impacts would occur to visual resources. The WSA would be redesignated as VRM Class I, designed to ensure that the natural character of the area would be protected. However, allowed oil and gas activities on pre-FLPMA leases would adversely impact some of the visual values of the WSA.

Noise

The noise level in the WSA would increase as a result of allowed oil and gas activities within and adjacent to the WSA. This increase is expected to have a moderately adverse impact. This increase may only be short term, primarily during drilling activities, but it could represent a long-term impact if production facilities were installed. The lack of topographic relief and dense vegetation would make any increase in noise noticeable. Negotiations would be initiated with the U.S. Air Force to alter the route of their low-level training flights.

Land Use Constraints

Wilderness management would not conflict with county zoning, but it would conflict with the management of adjoining state lands.

Socioeconomic Conditions

Wilderness management would allow oil and gas exploration and development on over 90 percent of the WSA. Oil and gas industry activity is expected to increase employment, income, revenues, and taxes as a result of exploration and/or development.

SUMMARY OF IMPACTS

Site-specific impacts for the South Pinnacles WSA are summarized as follows: Under both the proposed action and the wilderness alternative, moderately adverse impacts would occur to the present natural resource base. This adverse impact is primarily the result of the extensive oil and gas development that is anticipated to occur.

Wilderness values would incur highly adverse impacts under the proposed action and the wilderness alternative. Recreation opportunities would not be adversely affected under the proposed action, but minor adverse impacts would occur under wilderness management, due to the elimination of vehicle-dependent recreation.

Under the proposed action and the wilderness alternative, highly beneficial impacts would occur to the present socioeconomic conditions and the oil and gas industry. These beneficial impacts would occur because most of the potential oil and gas resources within the WSA could be developed under either alternative.



CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

This WSA is located in east-central Sweetwater County about 40 miles northeast of Rock Springs (see Map AB-1). The WSA consists of 12,800 acres, including a portion of the Killpecker Sand Dunes within the Red Desert-Great Divide Basin. The topography is predominantly rolling sand dunes with elevations varying by only about 100 feet. Much of this WSA is covered by active dunes and devoid of vegetation. Stabilized dune areas are vegetated with big sagebrush, saltbush, and an interesting variety of grasses and forbs.

Wildlife in the WSA consists of pronghorn antelope, small mammals, coyotes, and bobcats. Wild horses also frequent the WSA, especially during spring and summer.

Key issues considered during the planning process, when the nonwilderness recommendation was made, included the unique values of this WSA and its ecological significance.

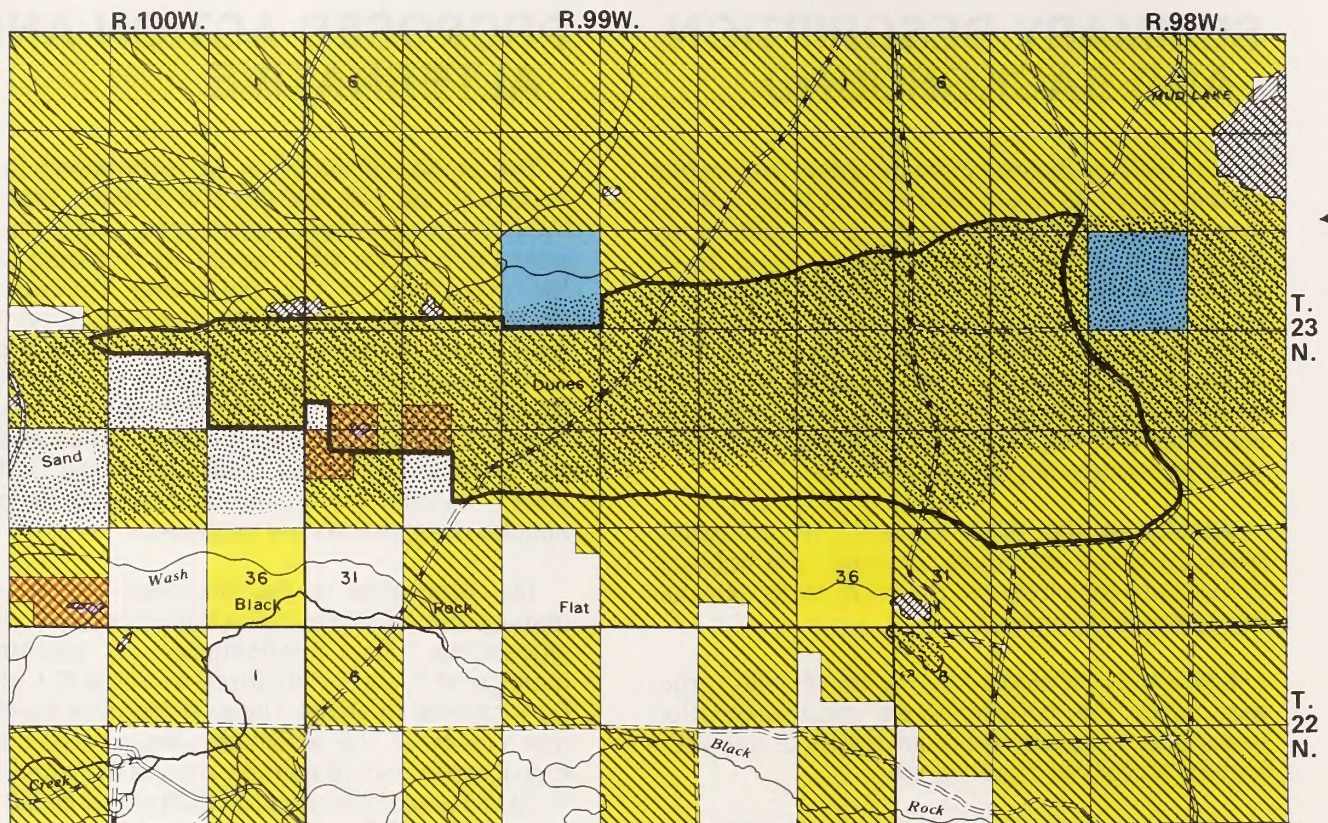
This site-specific analysis of the Alkali Basin-East Sand Dunes WSA analyzes the impacts of wilderness and nonwilderness management. In all alternatives considered in the District-wide Analysis, the Alkali Basin-East Sand Dunes WSA would either be managed as wilderness or non-wilderness. Under the proposed action and Alternatives 2 and 3, the WSA would be under non-wilderness management; under Alternative 1 the WSA would be managed as wilderness.




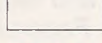
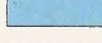

PROPOSED ACTION AND ALTERNATIVE

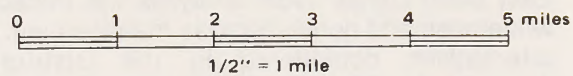
The proposed action is to recommend to the President, via the Secretary of Interior, that this WSA not be designated wilderness. Under the proposed action the WSA would be managed under the guidelines of the Big Sandy Management Framework Plan (MFP). The area would be managed under the same multiple-use criteria applied to the remainder of the Big Sandy Planning Unit. Specific decisions from the MFP may be obtained from the Big Sandy Resource Area Office and key decisions are listed on Table D-3 in the District-wide Analysis. No boundary changes or other special designations are proposed.

The alternative to the proposed action is to manage the Alkali Basin-East Sand Dunes WSA as wilderness. The implications of wilderness management are summarized in Table D-1 of the District-wide Analysis. Under wilderness management many of the activities allowed under MFP management would be restricted or curtailed. Pre-FLPMA lease development could occur on 50 percent of the WSA.

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values in the WSA. Other alternatives, such as reduced area for wilderness, were not considered realistic in light of public comment and responsible resource management under the Federal Land Policy and Management Act of 1976.



-  Wilderness Study Area Boundary
-  Public Land (Administered by BLM)
-  Public Water Reserve
-  Private Land
-  State Land
-  Federal Minerals



Map AB-1
Alkali Basin-East Sand Dunes WSA
LAND AND MINERAL STATUS

CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Alkali Basin-East Sand Dunes WSA is characteristic of the semiarid cold desert. Average daytime temperatures for the area range from 65° F. in July to 15° F. in January, with a growing season of approximately 175 days for grasses.

The area receives approximately 8 to 10 inches of precipitation annually, with less than half in the form of snow. The prevailing winds are generally from the west. Wind speeds normally average 15 mph, but gusts may reach as high as 82 mph preceding strong frontal passages. The highest wind speeds normally occur in late winter and spring.

AIR QUALITY

Within the Alkali Basin-East Sand Dunes WSA air pollution levels are low. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) do not exceed allowable standards (Science Applications, Inc. 1980). Particulate matter spawned by the combination of wind and an arid countryside, results in some degree of "natural" pollution; however, this type of pollution is negligible.

TOPOGRAPHY

Most of the Alkali Basin-East Sand Dunes WSA is relatively flat and unvaried. In the southern portion of the WSA, there are many large sand dunes, draws, and ridges. The sand dunes impart a rolling topography, and the draws and ridges of Alkali Creek provide topographic relief. The WSA is within the Great Divide Basin, a shallow depression nearly 100 miles long from east to west and a little more than 50 miles wide. The basin has interior drainage only and is literally perched on the Continental Divide. The elevation of the WSA averages 6,700 feet.



Expansive Alkali Basin-East Sand Dunes WSA.

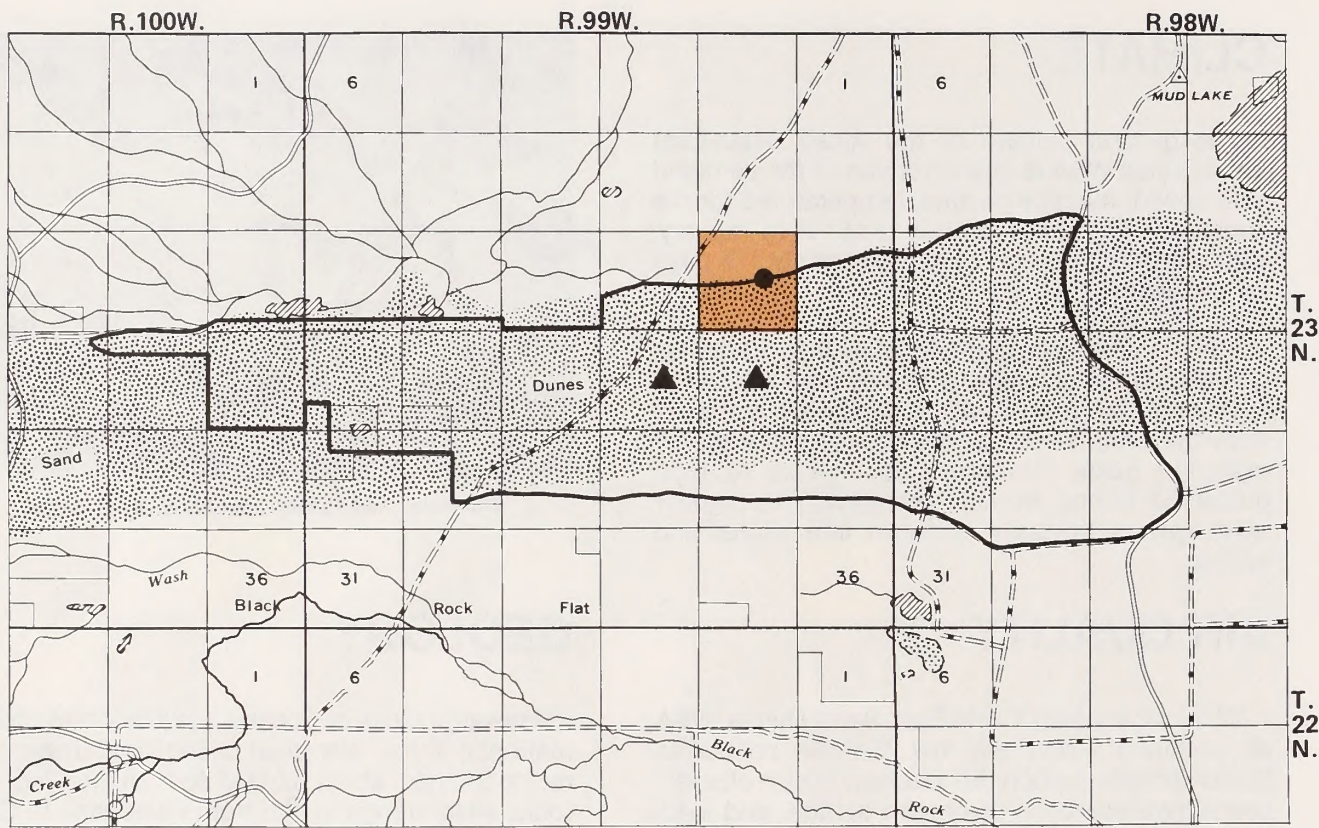
GEOLOGY





Fluviatile rocks of Eocene age (the Wasatch Formation) outcrop over most of the area. Unexposed rocks include about 25,000 feet of sedimentary rocks which range in age from Paleocene to Cambrian overlying the crystalline Precambrian basement.

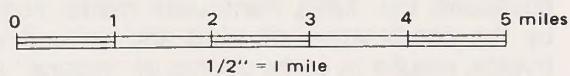
Mineral Resources

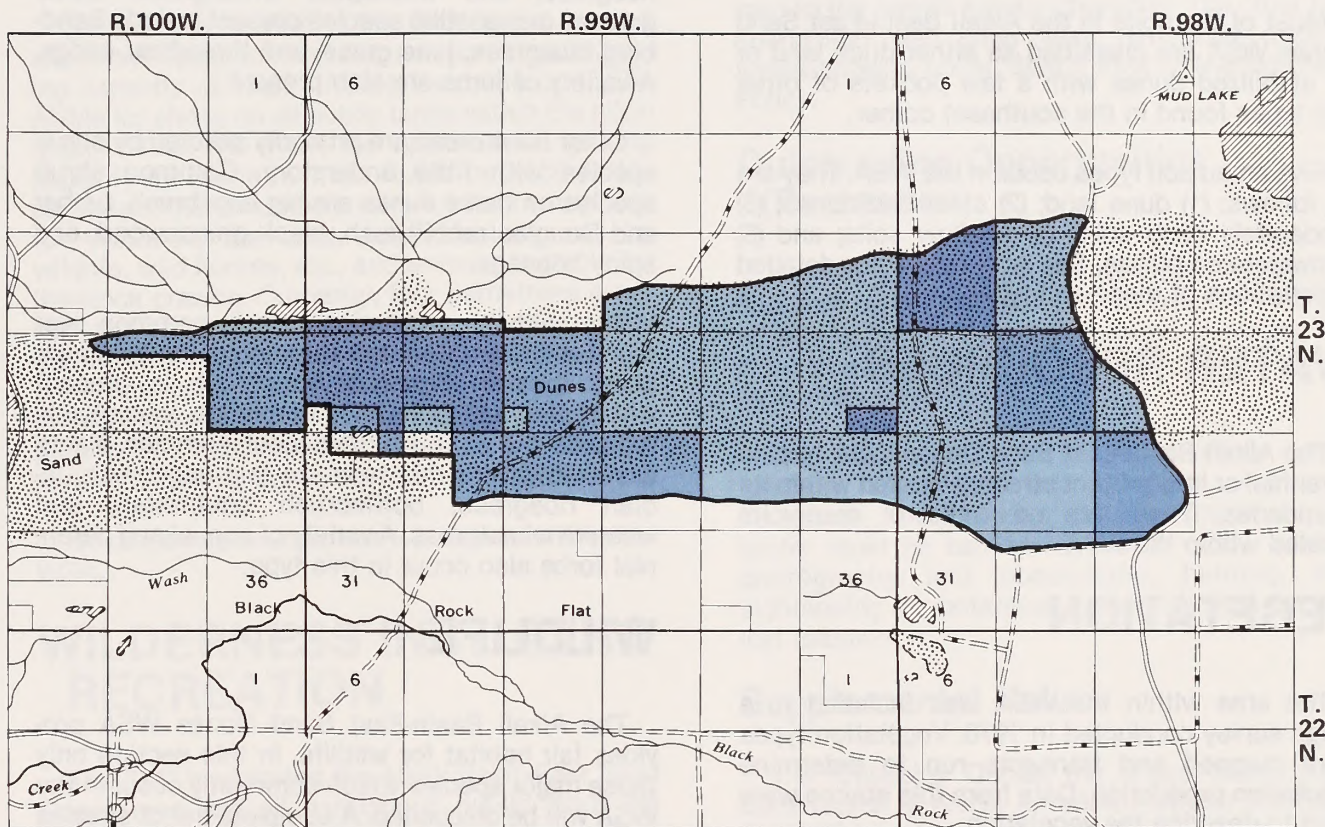
The primary mineral value in the WSA as indicated by public interest and industry contacts is hydrocarbons. The oil and gas potential for the WSA is unknown. Recent exploration has centered on the area north of the WSA, where five dry holes have been drilled since 1976. Anadarko Production Company has a producing well (presently shut-in) on the northern edge of the WSA in section 14, T. 23 N., R. 99 W. Two exploratory wells were drilled in the center of the WSA (1979 and 1980) and were both dry holes. Map AB-2 shows the oil and gas activity within and adjacent to the WSA. Approximately 50 percent of the WSA is covered by pre-FLPMA oil and gas leases (see Map AB-3).

Presently, no other mineral resources are known to exist within the WSA.



-  Wilderness Study Area Boundary
-  Dry Hole
-  Producing Well (Shut-In)
Anadarko Black Rock Federal A-1
-  Sinkhole Known Geologic Structure





Map AB-3
Alkali Basin-East Sand Dunes WSA
OIL AND GAS LEASES

ALKALI BASIN-EAST SAND DUNES

SOILS

Most of the soils in the Alkali Basin-East Sand Dunes WSA are classified as either dune land or as stabilized dunes with a few pockets of other soil types found in the southeast corner.

Five broad soil types occur in the WSA. They are as follows: (1) dune land; (2) stabilized dunes; (3) moderately deep soils; (4) shallow soils; and (5) nonvegetated playas. See Appendix F for detailed descriptions of these soil types.

WATER RESOURCES

The Alkali Basin-East Sand Dunes WSA has no perennial or intermittent streams located within its boundaries. There are no wells or reservoirs located within the WSA.

VEGETATION

The area within the WSA was included in a range survey conducted in 1976. Vegetation types were mapped and transects run to determine vegetation production. Data from this source were used to describe the vegetation.

Big sagebrush is the dominant vegetation type over much of the area. The most common grass species associated with big sagebrush are thickspike wheatgrass, Indian ricegrass, Sandberg bluegrass, needle-and-thread, and bottlebrush squirreltail. A variety of annual and perennial forbs are present seasonally.

Sand dune areas that have not been stabilized are essentially devoid of vegetation. In a few areas, some pioneer type plants are beginning to stabilize the active dunes. Scurfpea, dock, ryegrass, and wheatgrasses are some of the first plants to begin invading the active dunes. Between the dunes small wet and dry meadows are found. Grass species are common on these sites. Depending on the meadow, common species include sedges, inland saltgrass, cordgrass, and wheatgrasses.

Many of the dunes are stabilized by vegetation and are no longer actively moving. Depending on the stage of succession or the amount of time the dunes have been stabilized, vegetation varies considerably. Big sagebrush and Douglas and rubber rabbitbrush are common shrub species. Spiny hop-

sage is also present on some dunes. Common grass species are needle-and-thread, Indian ricegrass, and thickspike wheatgrass. Other grasses or grasslike species present include Sandberg bluegrass, june grass, and threadleaf sedge. A variety of forbs are also present.

Other dune areas are primarily covered by shrub species with little understory. Common shrub species on these dunes are big sagebrush, rubber and Douglas rabbitbrush, black greasewood, and spiny hopsage.

The saltbush vegetation type is common over much of the area. Nuttall saltbush is the dominant plant species. Birdsfoot sagebrush is present within the saltbush and, in places, completely replaces the saltbush. The most common plants associated with this type are bud sagebrush, Indian ricegrass, bottlebrush squirreltail, and western wheatgrass. A variety of annual and perennial forbs also occur in this type.

WILDLIFE

The Alkali Basin-East Sand Dunes WSA provides fair habitat for wildlife. In this section only those major species which commonly occur in the WSA will be discussed. A complete list of species found in this WSA is available for review in the Big Sandy Resource Area Office.

Valuable pronghorn antelope habitat is found within the WSA. These animals use the area yearlong. The Sands elk herd occasionally inhabits the WSA during the winter months. Coyotes are common throughout the WSA, and bobcats are uncommon residents.

WILD HORSES

The WSA is within the Divide Basin Wild Horse Herd Management Area (WHHMA) (see District-wide Analysis, Chapter 2, Map D-8). An inventory of the WHHMA in February 1982 indicated that there are 2,307 horses in the WHHMA. The management objective for the WHHMA is to reduce the numbers to 500 by fall 1984. Visitors to the WSA can expect to see herds in the area, especially in the summer. During the winter many of the horses move to the southern portion of the WHHMA, south of the WSA boundaries.

ALKALI BASIN-EAST SAND DUNES

ENVIRONMENTAL CONSEQUENCES

LIVESTOCK GRAZING

The WSA is located in the Red Desert grazing allotment. This allotment has an approximate grazing capacity of 15,391 AUMs for cattle or 18,756 AUMs for sheep on all public lands within the allotment. Within the WSA the approximate grazing capacity for cattle is 1,164 AUMs or 1,156 AUMs for sheep. These numbers do not reflect actual use for livestock; the total AUMs include use by wildlife, wild horses, etc., and areas unsuitable for livestock grazing. Currently, four permittees graze cattle or sheep on the allotment, with the use occurring from May 1 until December 15. One other permittee uses the allotment for trailing sheep during the spring and fall. A detailed management plan for the Red Desert Allotment is available for review in the Big Sandy Resource Area Office.

No range improvements are proposed within the WSA.

WILDERNESS INCLUDING RECREATION

The BLM inventoried the Alkali Basin-East Sand Dunes area and all contiguous public lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory, the Bureau determined that the Alkali Basin-East Sand Dunes WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Size

This WSA contains 12,800 acres. Originally the size was 47,130 acres in two separate inventory units divided by a road. The intensive inventory determined that this road did not exist. Boundary and intrusion adjustments reduced the acreage and combined the two units into one wilderness study area.

Naturalness

This WSA is essentially in a natural condition. The manmade intrusions in the WSA consist of three abandoned well sites, a shut-in gas well, and

two two-track trails. At the time of the intensive inventory, the two-track trails, one of the abandoned well sites, and the shut-in gas well were insignificant to the overall natural character. The other two abandoned well sites were temporary disturbances allowed under BLM's Interim Management Policy.

Outstanding Opportunities (Recreation)

Many large sand dunes, draws, and ridges in the southern half of the WSA provide excellent natural screening from the sight and sound of others. The dune area provides the best opportunity for a quality solitary experience.

The sand dunes provide outstanding opportunities for unconfined recreation, including horseback riding, hiking, backpacking, camping (water must be carried in), nature study, wildlife photography and observation, hunting, and sightseeing for botanical, zoological, and geological features.

Supplemental Values

The Killpecker Dunes, the largest active sand dune region in North America, traverse the WSA. This WSA includes an unspoiled remnant of the Red Desert area of the Great Divide Basin and was recommended for primitive area designation in BLM's Sandy-Pilot Butte MFP of 1975. This region may be of significant scientific value for the study of active sand dunes, their movements, and how they are stabilized.

CULTURAL RESOURCES

The few recorded archeological sites in the Alkali Basin-East Sand Dunes WSA are shallow surface sites with little deposition. Projectile points and chippings were found within the limited area which has received intensive inventory. Although no important archeological sites have yet been identified, the area does bear evidence that early day native Americans inhabited this region.

VISUAL RESOURCES

This WSA is classified as VRM Class III. The basic management guideline for this VRM class is

ALKALI BASIN-EAST SAND DUNES

described in detail in the District-wide Analysis, Chapter 2, Visual Resources.

NOISE

Existing noise levels within the WSA are low with occasional increases from two sources: oil and gas activities and U.S. Air Force Strategic Air Command's low-level training flights for B-52 bombers. The latter occurs infrequently and the chances of being in the WSA during an overflight are slight. The oil and gas activities do not presently cause much disturbance in the WSA, except for an occasional truck passing nearby and during geophysical exploration activities, particularly where explosives are used.

LAND USE CONSTRAINTS

The lands surrounding the WSA are predomi-

nantly public lands administered by BLM. There is a state section adjacent to the WSA on the north.

The WSA is located within Sweetwater County and is zoned as an agricultural district. As an agricultural district, there are numerous uses which may be allowed in the area. Some of these uses are: mineral exploration and drilling; oil and gas exploration and development; railway rights-of-way; and transmission lines, stations, and towers. More detailed information on zoning districts is available in the Zoning Resolution of Sweetwater County, Wyoming and in District-wide Analysis, Chapter 2, Land Use Constraints.

SOCIOECONOMIC CONDITIONS

This WSA is located in Sweetwater County. The current socioeconomic conditions of Sweetwater County are presented in the District-wide Analysis, Chapter 2, Socioeconomic Conditions.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumption is used for impact analysis:

The oil and gas potential of this WSA is unknown. Approximately 50 percent of the WSA is pre-FLPMA leased. However, the oil and gas industry interest in this WSA appears to be low. Therefore, only minimal oil and gas activities, largely exploration, are anticipated.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action no changes in air quality would occur. Only minimal oil and gas exploration activities are anticipated within the WSA.

Topography

Under the proposed action no impacts to topography are anticipated. Elevations within the WSA only vary by about 100 feet from the lowest to the highest points. Oil and gas exploration activities could be easily mitigated to reduce or eliminate any long-term topographical modifications.

Soils

Under the proposed action moderately adverse impacts would occur to soils. These adverse impacts are largely a result of disturbance associated with oil and gas exploration activities, particularly road construction. On the shallow easily eroded soils, disturbance would have severe effects; however, disturbance on unstabilized dunes would not cause an adverse impact. Surface disturbance on stabilized dunes would cause the dunes to revert to an active state. However, most

of the WSA is relatively flat and most of the adverse impacts could be mitigated by rehabilitation of disturbed areas.

Vegetation

Under the proposed action minor adverse impacts would occur to vegetation. Some loss of vegetation would occur as a result of the anticipated oil and gas exploration activities. Much of this can be mitigated by reseeding after exploration is completed.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Wildlife

Under the proposed action minor adverse impacts would occur to wildlife. There would be some loss of habitat as a result of the oil and gas exploration activities. The major impact would be the displacement of animals from their natural use areas due to disturbance. Some of these impacts could be mitigated, but the overall impacts would be slightly adverse to all wildlife species.

Wild Horses

Under the proposed action no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. The anticipated oil and gas exploration activities would not adversely affect the horses.

Livestock Grazing

Under the proposed action minor beneficial impacts would occur to livestock grazing. This would be due to the possible development of new water sources as a result of oil and gas drilling. Livestock management would not be adversely affected by the proposed action. Motor vehicle use would be limited to existing roads and two-track trails, but this would not constrain livestock management as this is the present practice. Any

ALKALI BASIN-EAST SAND DUNES

range improvements proposed for the WSA in the future could be constructed.

Wilderness Including Recreation

Wilderness Values

Under the proposed action moderately adverse impacts would occur to wilderness values. Implementation of the proposed action would result in the loss of the opportunity to establish this typical example of the Red Desert area of the Great Divide Basin as wilderness. This area would have added to the diversity of the National Wilderness Preservation System. The natural character of the area would be impaired as a result of oil and gas exploration activities.

The primitive or wilderness type recreation values and opportunities for solitude would be impaired. Although the WSA contains 12,800 acres, it is relatively flat and the opportunities for solitude are limited. If even minimal development occurred on the adjoining lands, the wilderness recreation opportunities of this area would be severely impacted.

Recreation Opportunities

Recreation opportunities and uses within the WSA would not be significantly impacted as a result of the proposed action. Motor vehicle use would be limited to existing roads and two-track trails. Currently, there is very little use off of these existing roads or trails. The primary identified recreation uses, hunting and sightseeing, would not be significantly affected.

Cultural Resources

Under the proposed action no impacts would occur to cultural resources. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under the proposed action no impacts would occur to visual resources. Anticipated oil and gas ac-

tivities would not conflict with the existing Visual Resource Management Class III. The anticipated intrusions would be acceptable with only minor mitigation being necessary. Only minimal oil and gas exploration activity is anticipated.

Noise

A minor increase in the noise level within the WSA would be expected if oil and gas exploration activity increases. The lack of topographic relief or dense vegetation over much of the area would make any increase in noise noticeable. U.S. Air Force low-level bomber training flights would continue on a sporadic basis.

Land Use Constraints

The proposed action would not conflict with county zoning, and there would be no conflict with the management on the adjoining state lands.

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives is a composite of the general trend in resource use for all the WSAs.

Under the proposed action increases in proprietors' income could accrue to the livestock industry. This would be due to the possible development of new water sources as a result of oil and gas exploration activities.

Under the proposed action there would be no impacts to visitor-days expected in this WSA. Expenditures for recreational use of the WSA are not expected to change. Hunting and sightseeing, the primary recreation uses, would continue at present levels.

The proposed action would allow oil and gas exploration and development throughout the WSA. Oil and gas industry activity is expected to increase employment, income, revenues, and taxes as a result of exploration and/or development.

ALKALI BASIN-EAST SAND DUNES

IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Wilderness designation would assist in maintaining existing air quality and other natural resource values. Possible oil and gas exploration on pre-FLPMA leases in the WSA may affect air quality, but no impacts, based on minimal industry interest, are projected.

Topography

Under wilderness management no impacts to topography are anticipated. Elevations only vary by about 100 feet from the lowest to the highest points. Allowed oil and gas exploration activities on pre-FLPMA leases could be easily mitigated to reduce or eliminate any long-term topographical modifications.

Soils

Under wilderness management minor adverse impacts would occur to soils. Disturbance associated with allowed oil and gas activities on pre-FLPMA leases would continue to cause adverse impacts to soils. However, at a minimum, nondegradation requirements would be applied. In the long term, as exploration ceases, the soils would stabilize, but would never return to their original condition.

Vegetation

Under wilderness management minor adverse impacts would occur to vegetation. Some loss of vegetation would occur as a result of allowed oil and gas exploration activities on pre-FLPMA leases; however, most of the adverse impact could be mitigated by reseeding after exploration is completed.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations

then become seed sources for further invasions of surrounding newly disturbed areas.

Wildlife

Under wilderness management minor adverse impacts would occur to wildlife. In the short term there would be some loss of habitat and displacement of animals, due to allowed oil and gas activities on pre-FLPMA leases. As exploration ceased, the animals would return as their habitat returned to its former condition. However, it is unlikely in an area this small, that all existing species would return to their former habitat, unless activities on surrounding lands were minimal.

Wild Horses

Under wilderness management no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Allowed oil and gas activities on pre-FLPMA leases would not adversely affect the horses.

In accordance with the special exceptions allowed under the wilderness management policy, special authorization would be required to allow low-level helicopter use for periodic roundups.

Livestock Grazing

Under wilderness management minor beneficial impacts would occur to livestock grazing. This would be due to the possible development of new water sources as a result of oil and gas drilling. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock.

If the WSA is designated wilderness, it is anticipated that the number of range improvements that could be implemented would decrease slightly. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock. Existing and future improvements could be maintained with motor

ALKALI BASIN-EAST SAND DUNES

vehicles or motorized equipment only if no other alternatives exist. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determined that other alternatives (such as horseback) do not exist and wilderness values would not be impaired. This motor vehicle restriction could cause some loss of efficiency in livestock management.

Wilderness Including Recreation

Wilderness Values

Designation of the WSA as wilderness would add to the diversity of the National Wilderness Preservation System by adding a typical example of the Red Desert area of the Great Divide Basin. The natural character of the WSA would be slightly impacted in the short term as a result of allowed oil and gas exploration on pre-FLPMA leases. However, the natural values would return to their approximate former condition in the very long term (50 to 100 years). Although the WSA contains 12,800 acres, it is relatively flat and the opportunities for solitude are limited. If even minimal development occurred on the adjoining lands, the wilderness recreation opportunities in the WSA would be impacted. If exploration is minimal, the existing wilderness character of the area would remain intact.

Recreation Opportunities

Under wilderness management minor adverse impacts would occur to recreation opportunities. Wilderness designation would eliminate the use of motor vehicles within the WSA. This would decrease hunter use and sightseeing, which are identified as the major recreation uses at present. The primitive or wilderness type recreation values and opportunities for solitude would be severely impacted or lost, if full development of pre-FLPMA leases were to occur or if development occurred on adjoining lands. However, as wilderness oriented recreation use of the WSA is minimal at present, and it is not anticipated to increase, this adverse impact would be minor. If development does not occur, these values would remain essentially as they are at present.

Cultural Resources

Under wilderness management no impacts would occur to cultural resources. Allowed oil and gas exploration activities on pre-FLPMA leases

could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under wilderness management no impact would occur to visual resources. The WSA would be redesignated as VRM Class I, designed to ensure that the natural character of the area would be protected. Allowed oil and gas activities on pre-FLPMA leases would adversely affect some of the visual values of the WSA. However, only minimal oil and gas activity is anticipated in this WSA.

Noise

The noise level within the WSA would remain approximately the same as present. However, if production facilities were developed anywhere near the WSA, noise levels would increase. The lack of topographic relief or dense vegetation over much of the WSA would make any increase in noise noticeable. Negotiations would be initiated with the U.S. Air Force to alter the route of their low-level training flights.

Land Use Constraints

Wilderness designation would not conflict with county zoning, but it would conflict with the management on adjoining state lands.

Socioeconomic Conditions

Under wilderness management increases in proprietors' income could accrue to the livestock industry. This would be due to the possible development of new water sources as a result of oil and gas exploration activities.

Under wilderness management there would be a minor decrease in the number of visitor-days expected in the WSA, due to a decrease in hunter use and sightseeing, which are the primary recreation uses at present. However, expenditures for recreational use of the WSA are not expected to change.

Under wilderness management no change from the present employment, income, revenues, and taxes attributable to the WSA are anticipated. Ex-

ALKALI BASIN-EAST SAND DUNES

ploration would be allowed to occur on pre-FLPMA leases with nondegradation requirements applied.

SUMMARY OF IMPACTS

Site-specific impacts for the Alkali Basin-East Sand Dunes WSA are summarized as follows: Implementation of the proposed action would result in minor adverse impacts to the present natural resource base. Wilderness designation would result in negligible change from the present situation. The adverse impacts occurring under the proposed action are a result of anticipated oil and gas activities.

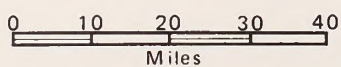
However, as oil and gas industry interest in this WSA appears to be low, only minimal oil and gas activities, primarily exploration, are anticipated. If only minimal activity occurs within the WSA, the area could be readily returned to a natural condition due to the shifting nature of the dunes.

Wilderness designation would provide greater protection to natural resources, as approximately half of the WSA has not been pre-FLPMA leased. Wilderness management would limit disturbance

to the leased areas and would require effective rehabilitation of disturbed areas. Wilderness management would protect a portion of the unique Killpecker Sand Dunes for scientific studies of sand dune ecology and activity.

Under the proposed action moderately adverse impacts would occur to wilderness values. Under wilderness management no impacts would occur to wilderness values. More extensive oil and gas exploration activities could occur under the proposed action, causing the adverse impacts. Recreation opportunities would not be affected by the proposed action, but wilderness designation would cause minor adverse impacts, due to the elimination of motor vehicles in the WSA.

Under the proposed action minor beneficial impacts would occur to present socioeconomic conditions and the oil and gas industry. These beneficial impacts occur because mineral development can occur. Wilderness management would not affect the present socioeconomic conditions or the oil and gas industry. Livestock management may also derive minor beneficial impacts under either alternative, if new water sources are developed as a result of oil and gas exploration activities.





Scale 1:50,000
Sheet 1 of 2
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CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

SUMMARY DESCRIPTION AND BACKGROUND

This WSA is located in east-central Sweetwater County about 50 miles northeast of Rock Springs (see Map RL-1). The WSA is adjacent to the Alkali Basin-East Sand Dunes WSA; separated only by a gravel road. The WSA consists of 9,515 acres, including a portion of the Killpecker Sand Dunes within the Red Desert area of the Great Divide Basin. The topography is predominantly rolling sand dunes, with elevations varying by only about 200 feet. Much of the WSA is covered by active dunes and devoid of vegetation. Stabilized dune areas are vegetated with big sagebrush, saltbush, and an interesting variety of grasses and forbs.

Wildlife in the WSA consists of pronghorn antelope, small mammals, coyotes, and bobcats. Wild horses also frequent the WSA, especially during spring and summer.

Key issues considered during the planning process, when the nonwilderness recommendation was made, included the unique values of this WSA and its ecological significance.

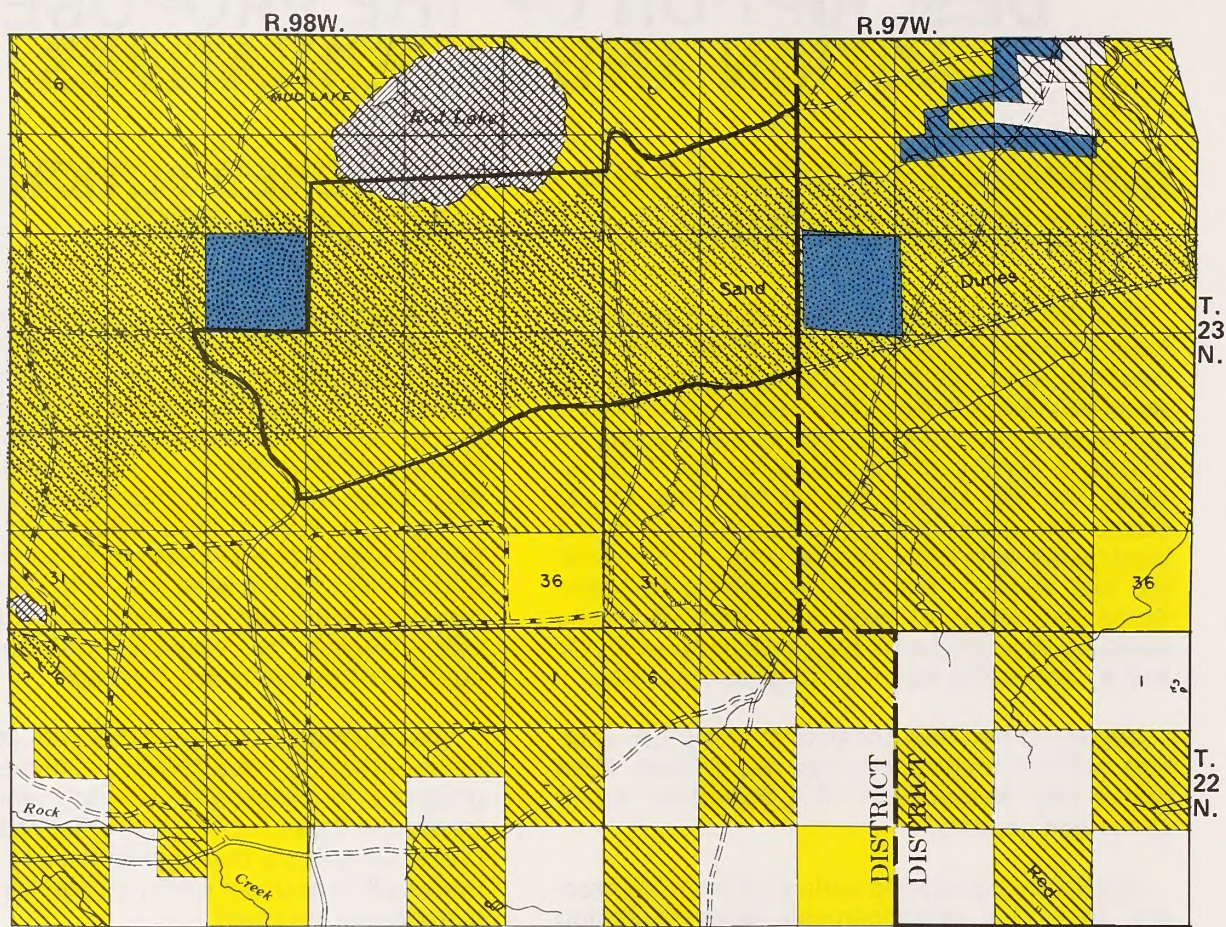
This site-specific analysis of the Red Lake WSA analyzes the impacts of wilderness and non-wilderness management. In all alternatives considered in the District-wide Analysis; the Red Lake WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternatives 2 and 3, the WSA would be under non-wilderness management; under Alternative 1 the WSA would be managed as wilderness.




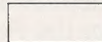

PROPOSED ACTION AND ALTERNATIVE

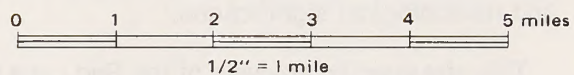
The proposed action is to recommend to the President, via the Secretary of the Interior, that this WSA not be designated wilderness. Under the proposed action the WSA would be managed under the guidelines of the Big Sandy Management Framework Plan (MFP). The area would be managed under the same multiple-use criteria applied to the remainder of the Big Sandy Planning Unit. Specific decisions from the MFP may be obtained from the Big Sandy Resource Area Office and key decisions are listed on Table D-3 in the District-wide Analysis. No boundary changes or other special designations are proposed.

The alternative to the proposed action is to manage the Red Lake WSA as wilderness. The implications of wilderness management are summarized in Table D-1 of the District-wide Analysis. Under wilderness management many of the activities allowed under MFP management would be restricted or curtailed.

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values in the WSA. Other alternatives, such as reduced area for wilderness, were not considered realistic in light of public comment or as responsible resource management under the Federal Land Policy and Management Act of 1976.



-  Wilderness Study Area Boundary
-  Public Land (Administered by BLM)
-  State Land
-  Private Land
-  Federal Minerals



Map RL-1
Red Lake WSA
LAND AND MINERAL STATUS

CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Red Lake WSA is characteristic of the semiarid cold desert. Average daytime temperatures for the area range from 65° F. in July to 15° F. in January, with a growing season of approximately 175 days for grasses.

The area receives approximately 8 to 10 inches of precipitation annually, with less than half in the form of snow. The prevailing winds are generally from the west. Wind speeds normally average 15 mph, but gusts may reach as high as 82 mph preceding strong frontal passages. The highest wind speeds normally occur in late winter and spring.

AIR QUALITY

Within the Red Lake WSA air pollution levels are low. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) standards (Science Applications, Inc. 1980). Particulate matter, spawned by the combination of wind and an arid countryside, results in some degree of "natural" pollution; however, this type of pollution is negligible.

TOPOGRAPHY

The Red Lake WSA contains a portion of a large playa lake (Red Lake), which exhibits the red color for which the Red Desert was named. The WSA contains rolling sagebrush hills which are typical of southwestern Wyoming. In addition, it includes a portion of the largest active sand dune field in North America, the Killpecker Sand Dunes. These dunes dominate the WSA.

The WSA is within the Great Divide Basin, a shallow depression nearly 100 miles long from east to west and a little more than 50 miles wide. The basin has interior drainage only and is literally perched on the Continental Divide. The elevation of the WSA averages 6,700 feet.

GEOLOGY

Fluviatile rocks of Eocene age (the Wasatch Formation) outcrop over most of the area. Unexposed



Active and stabilized dunes in Red Lake WSA.

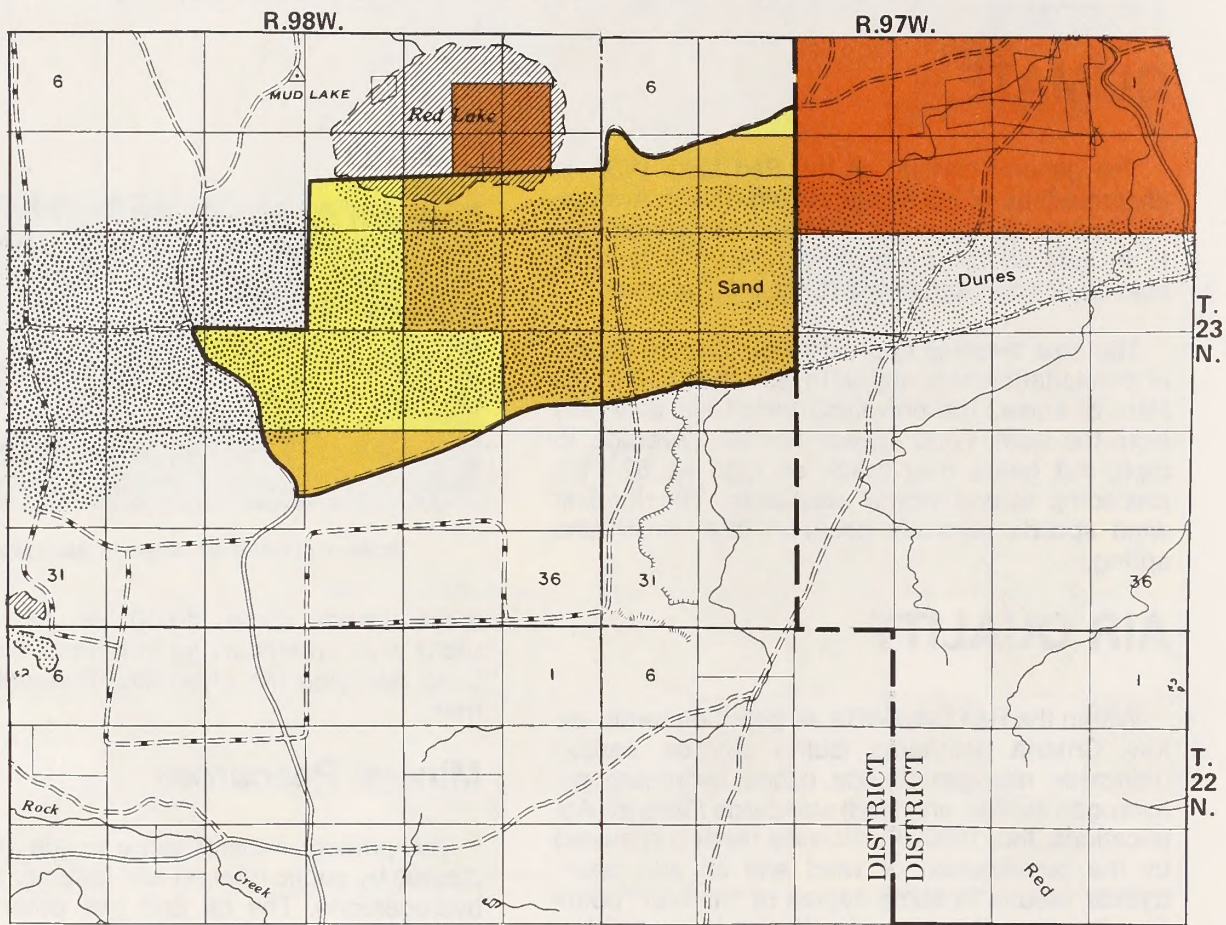
rocks include about 25,000 feet of sedimentary rocks which range in age from Paleocene to Cambrian overlying the crystalline Precambrian basement.

Mineral Resources

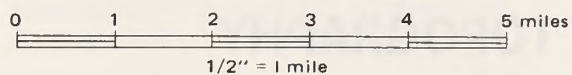
The primary mineral value in the WSA, as indicated by public interest and industry contacts, is hydrocarbons. The oil and gas potential of the WSA is unknown. The Hay Reservoir Production Unit, which is adjacent to the WSA on the east, has been actively producing natural gas and some petroleum condensates for several years (see Map RL-2). Wells drilled east of the WSA usually have some production. An exploratory well north of the WSA within the Mud Lake KGS (see Map RL-2), produced some natural gas and petroleum condensates at 10,359 feet, but was abandoned by Ohio Oil Company in 1960. Wells drilled adjacent to the WSA on the west and south have been dry holes. There are no records of exploration within the WSA itself, where the active sand dunes make oil and gas development very difficult. About one-third of the WSA is pre-FLPMA leased and the remaining area is post-FLPMA leased (see Map RL-2). Presently, no other mineral resources are known to exist in the WSA.

SOILS

Most of the soils in the Red Lake WSA are classified as either dune land or as stabilized dunes, with a few pockets of other soil types found on the northern and southern fringes.



- Wilderness Study Area Boundary
- Pre-FLPMA Leases
- Post-FLPMA Leases
- Hay Reservoir Production Unit
- Red Lake Known Geologic Structure



RED LAKE

Six broad soil types occur in the Red Lake WSA. They are as follows: (1) dune land; (2) stabilized dunes; (3) shallow soils (residual uplands); (4) moderately deep soils (residual uplands); (5) alkaline-saline soils; and (6) nonvegetated playas. See Appendix F for detailed descriptions of these soil types.

WATER RESOURCES

The Red Lake WSA has no perennial streams located within its boundary. There are a couple of intermittent streams which comprise the bulk of the water in the area. There are no reservoirs located within the WSA. However, a water well and accompanying water trough are located just inside the northern boundary road.

VEGETATION

Playa areas are primarily devoid of vegetation. An occasional clump of greasewood is present. In scattered areas small patches of salt tolerant annual forbs may be found.

Big sagebrush is the dominant vegetation type over much of the area. The most common grass species associated with big sagebrush are thickspike wheatgrass, Indian ricegrass, Sandberg bluegrass, needle-and-thread, and bottlebrush squirreltail. A variety of annual and perennial forbs are present seasonally.

Sand dune areas that have not been stabilized are essentially devoid of vegetation. In a few areas, some pioneer type plants are beginning to stabilize the active dunes. Scurfpea, dock, ryegrass, and wheatgrasses are some of the first plants to begin invading the active dunes. Between the dunes small wet and dry meadows are found. Grass species are common on these sites. Depending on the meadow, common species include sedges, inland saltgrass, cordgrass, and wheatgrasses.

Many of the dunes are stabilized by vegetation and are no longer actively moving. Depending on the stage of succession or the amount of time the dunes have been stabilized, vegetation varies considerably. Big sagebrush and Douglas and rubber rabbitbrush are common shrub species. Spiny hopsage is also present on some of the dunes. Common grass species are needle-and-thread, Indian

ricegrass, and thickspike wheatgrass. Other grasses or grasslike species present include Sandberg bluegrass, june grass, and threadleaf sedge. A variety of forbs are also present.

Other dune areas are primarily covered by shrub species with little understory. Common shrub species on these dunes are big sagebrush, rubber and Douglas rabbitbrush, black greasewood, and spiny hopsage.

The saltbush vegetation type is common over much of the area. Nuttall saltbush is the dominant plant species. Birdsfoot sagebrush is present in the saltbush type and in places, completely replaces the saltbush. The most common plants associated with this type are bud sagebrush, Indian ricegrass, bottlebrush squirreltail, and western wheatgrass. A variety of annual and perennial forbs also occur in this type.

Playa areas are primarily devoid of vegetation. An occasional clump of greasewood is present. In scattered areas small patches of salt tolerant annual forbs may be found.

WILDLIFE

The Red Lake WSA provides fair habitat for wildlife. In this section, only those major species which commonly occur in the WSA will be discussed. A complete list of species found in this WSA is available for review in the Big Sandy Resource Area Office.

Valuable pronghorn antelope habitat is found within the WSA. These animals use the area yearlong. The Sands elk herd occasionally inhabits the WSA during the winter months. Coyotes are common throughout the WSA, and bobcats occur as uncommon residents.

WILD HORSES

The WSA is within the Divide Basin Wild Horse Herd Management Area (WHHMA) (see District-wide Analysis, Chapter 2, Map D-8). An inventory in February 1982 indicated that there are 2,307 horses in the WHHMA. The management objective for the WHHMA is to reduce the numbers to 500 by fall 1984. Visitors to the WSA can expect to see herds in the area, especially in the summer. During the winter many of the horses move to the

RED LAKE

southern portion of the WHHMA, south of the WSA boundaries.

LIVESTOCK GRAZING

The Red Lake WSA is located in the Red Desert grazing allotment. This allotment has an approximate grazing capacity of 15,391 AUMs for cattle or 18,756 AUMs for sheep on all public lands within the allotment. Within the WSA the approximate grazing capacity for cattle is 756 AUMs or 739 AUMs for sheep. These numbers do not reflect actual use for livestock; the total AUMs include use by wildlife, wild horses, etc., and areas unsuitable for livestock grazing. Currently, six permittees graze cattle or sheep on the allotment, with the use occurring from May 1 until December 15. One other permittee uses the allotment for trailing sheep during the spring and fall. A detailed management plan for the Red Desert Allotment is available for review in the Big Sandy Resource Area Office.

WILDERNESS INCLUDING RECREATION

The BLM inventoried the Red Lake area and all contiguous public lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory, the Bureau determined that the Red Lake WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Size

This WSA contains 9,515 acres and is entirely public land. The original inventory unit was 10,602 acres. During the intensive inventory 1,087 acres were dropped, due to the presence of roads and a section of state land.

Naturalness

The Red Lake WSA, in its present condition, is clearly in a natural state. Intrusions in the WSA include a minor two-track trail, originating off the western boundary road; a well and accompanying water trough, just inside the northern boundary

road; and a few random tracks from off-road vehicles.

Outstanding Opportunities (Recreation)

Extensive opportunities for primitive and unconfined recreation exist in the WSA. The large dunes rising abruptly from the surrounding vegetation offer a striking contrast for sightseers and photographers. Raptors, wild horses, pronghorn antelope, coyotes, and a variety of small mammals also challenge the photographer. Hiking, backpacking, camping (water must be carried in), horseback riding, hunting, and sightseeing for botanical, zoological, and geological features, are other experiences available to the visitor.

Supplemental Values

The Killpecker Sand Dunes, the largest active sand dune region in North America, traverse this WSA from west to east. This WSA includes an unspoiled remnant of the Red Desert area of the Great Divide Basin and was recommended for primitive area designation in BLM's Sandy-Pilot Butte MFP of 1975. This region may be of significant scientific value for the study of active sand dunes, their movements, and how they are stabilized.

CULTURAL RESOURCES

The Red Lake WSA has undergone only limited cultural resource inventory. However, both surface sites of chips and more substantial prehistoric campsites have been found. Although archeological sites of national significance have not been identified, it does bear evidence that early day native Americans inhabited this region.

VISUAL RESOURCES

This WSA is classified as Visual Resource Management (VRM) Class III. The basic management guideline for this VRM class is described in the District-wide Analysis, Chapter 2, Visual Resources.

RED LAKE

NOISE

Existing noise levels within the WSA are low with occasional increases from two sources; oil and gas activities and U.S. Air Force Strategic Air Command's low-level training flights for B-52 bombers. The latter occurs infrequently and the chances of being in the WSA during an overflight are slight. The oil and gas activities do not presently cause much disturbance in the WSA, except for an occasional truck passing nearby and during geophysical exploration activities, particularly where explosives are used.

LAND USE CONSTRAINTS

The lands surrounding the Red Lake WSA are predominantly public lands administered by BLM. There are two state sections adjacent to the WSA,

one on the east and one on the west. The WSA is located within Sweetwater County and is zoned as an agricultural district. As an agricultural district, there are numerous uses which may be allowed in the area. Some of these uses are: mineral exploration and drilling; oil and gas exploration and development; railway rights-of-way; and transmission lines, stations, and towers. More detailed information on zoning districts is available in the Zoning Resolution of Sweetwater County, Wyoming, and in the District-wide Analysis, Chapter 2, Land Use Constraints.

SOCIOECONOMIC CONDITIONS

This WSA is located in Sweetwater County. The socioeconomic conditions of Sweetwater County are presented in the District-wide Analysis, Chapter 2, Socioeconomic Conditions.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines listed in the District-wide Analysis, Chapter 3, the following assumption is used for impact analysis:

It is assumed that oil and gas development would be moderate, even under wilderness management. Although only 30 percent of the WSA is pre-FLPMA leased, post-FLPMA leases adjoin areas of present production. It is assumed that minor development would be allowed in the post-FLPMA leases, even under wilderness management, although the development would probably be offsite.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action minor adverse impacts would occur to air quality. There would possibly be a slight increase in total suspended particulates (TSP) and other pollutants within the WSA, due to anticipated oil and gas development activities.

Topography

Under the proposed action no impacts to topography are anticipated. Elevations only vary by about 200 feet from the lowest to the highest points, and oil and gas exploration and development activities could be easily mitigated to reduce or eliminate any long-term topographical modifications.

Soils

Under the proposed action highly adverse impacts would occur to soils. These adverse impacts

are largely a result of disturbance associated with oil and gas exploration activities, particularly road construction. On the shallow and easily eroded soils, disturbance would have severe effects; however, disturbance on active dunes would recover rapidly. Disturbance on stabilized dunes would cause the dunes to revert to an active state. Many of the adverse impacts could be mitigated by rehabilitation of disturbed areas.

Water Resources

Under the proposed action impacts to water resources within the WSA would be negligible. There are no perennial streams or reservoirs in the area. Most potential impacts to intermittent streams would be mitigated through application of site-specific mitigation requirements to any proposed surface-disturbing activities.

Vegetation

Under the proposed action moderately adverse impacts would occur to vegetation. Moderate loss of vegetation would occur as a result of the anticipated oil and gas activities. Much of this can be mitigated by reseedling after exploration or production is completed, however, revegetation will be difficult in much of this area.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Wildlife

Under the proposed action moderately adverse impacts would occur to wildlife. There would be some loss of habitat as a result of anticipated oil and gas activities. The major impact would be the displacement of wildlife from their natural use areas due to disturbance. Some of these impacts could be mitigated, but the overall impacts would be adverse to all wildlife species.

RED LAKE

Wild Horses

Under the proposed action no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the Red Lake WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Anticipated oil and gas activities would not adversely affect the horses.

Livestock Grazing

Under the proposed action minor beneficial impacts would occur to livestock grazing. This would be due to the possible development of new water sources as a result of oil and gas drilling. Livestock management would not be adversely affected by the proposed action. Vehicle use would be limited to existing roads and two-track trails, but this would not constrain livestock management as this is the present practice. Any range improvements proposed for the WSA in the future could be constructed.

Wilderness Including Recreation

Wilderness Values

Under the proposed action highly adverse impacts would occur to wilderness values. Implementation of the proposed action would result in the loss of the opportunity to establish this typical example of the Red Desert area of the Great Divide Basin as wilderness. This area would have added to the diversity of the National Wilderness Preservation System. The natural character of the area would be impaired as a result of oil and gas exploration activities.

The primitive or wilderness type recreation values and opportunities for solitude would be severely impacted or lost, if even minimal development were to occur within or adjacent to the WSA.

Recreation Opportunities

Recreation resources and uses within the WSA would not be significantly impacted as a result of the proposed action. Vehicle use would be limited to existing roads and two-track trails. However, at present there is very little use off of these existing trails. The primary identified recreation uses, hunting and sightseeing, would not be significantly affected.

Cultural Resources

Under the proposed action no impacts would occur to cultural resources. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under the proposed action minor adverse impacts would occur to visual resources. Anticipated oil and gas activities would not conflict with the existing Visual Resource Management Class III. The anticipated intrusions would be acceptable with only minor mitigation being necessary.

Noise

A moderate increase in the noise level within the WSA would be expected, if oil and gas exploration activity increases. The lack of topographic relief or dense vegetation over much of the area would make any increase in noise noticeable. U.S. Air Force low-level bomber training flights would continue on a sporadic basis.

Land Use Constraints

The proposed action would not conflict with county zoning, and there would be no conflict with the management on the adjoining state lands.

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives is a composite of the general trend in resource use for all the WSAs.

Under the proposed action increases in proprietors' income could accrue to the livestock industry. This would be due to the possible develop-

RED LAKE

ment of new water sources as a result of oil and gas exploration activities.

Under the proposed action expenditures for recreational use of the WSA are not expected to change. Hunting and sightseeing, the primary recreation uses, would continue at present levels.

The proposed action would allow oil and gas exploration and development throughout the WSA. Activity by the oil and gas industry is expected to increase employment, income, revenues, and taxes as a result of exploration and/or development.

IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Under wilderness management minor adverse impacts would occur to air quality. Wilderness designation would assist in maintaining existing air quality and other natural resource values. However, because of constraints on BLM wilderness management (see District-wide Analysis, Chapter 1, BLM Wilderness Management Policies), some adverse impacts would occur, largely due to oil and gas activities on pre-FLPMA leases. There would be an increase in the total suspended particulates (TSP) and other pollutants within the WSA, due to increased oil and gas exploration and development activities.

Topography

Under wilderness management no impacts to topography are anticipated. Elevations only vary by about 200 feet from the lowest to the highest points. Allowed exploration and development activities on pre-FLPMA leases could be easily mitigated to reduce or eliminate any long-term topographical modifications.

Soils

Under wilderness management moderately adverse impacts would occur to soils. Disturbance associated with oil and gas activities on pre-

FLPMA and some post-FLPMA leases would cause adverse impacts to soils. However, at a minimum, nondegradation requirements would be applied and, in some cases, nonimpairment requirements. In the very long term, as activities ceased and facilities were removed, the soils would stabilize, but they would never return to their original condition.

Water Resources

Impacts to water resources within the WSA would be negligible. There are no perennial streams or reservoirs in the WSA. Most potential impacts to intermittent streams would be mitigated through application of at least nondegradation requirements, and, in some cases, nonimpairment requirements on any proposed surface-disturbing activities.

Vegetation

Under wilderness management moderately adverse impacts would occur to vegetation. Some loss of vegetation would occur as a result of allowed oil and gas activities (primarily on pre-FLPMA leases). Much of the adverse impact could be mitigated by reseeding after exploration or production is completed.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas. In order to lessen the adverse impacts, the amount of disturbance would be minimized and at least nondegradation requirements applied.

Wildlife

Under wilderness management minor adverse impacts would occur to wildlife. In the long term there would be some loss of habitat and displacement of animals, due to oil and gas activities. In the very long term, as the allowed oil and gas activities ceased, the animals would return as their habitat returned to its former condition. It is unlikely, however, that all existing species would return to their former habitat unless activities on the surrounding lands were minimal.

RED LAKE

Wild Horses

Under wilderness management no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the Red Lake WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Anticipated oil and gas activities would not adversely affect the horses. In accordance with the special exceptions allowed under the wilderness management policy, authorization would be required to conduct low-level helicopter roundups within the WSA.

Livestock Grazing

Under wilderness management minor beneficial impacts would occur to livestock grazing. This would be due to the possible development of new water sources as a result of oil and gas exploration activities. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock.

If the WSA is designated wilderness, it is anticipated that the number of range improvements that could be implemented would decrease slightly. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determined that other alternatives (such as horseback) do not exist and wilderness values would not be impaired. This motor vehicle restriction could cause some loss of efficiency in livestock management.

Wilderness Including Recreation

Wilderness Values

Under wilderness management highly adverse impacts would occur to wilderness values, due to allowed oil and gas activities. Designation of the WSA as wilderness would add to the diversity of the National Wilderness Preservation System by adding a typical example of the Red Desert area of the Great Divide Basin.

The natural character of the WSA would be adversely impacted in the long term, as a result of anticipated oil and gas exploration and possibly production on pre-FLPMA and some post-FLPMA leases. However, the amount of exploration and development that actually occurs would determine the extent of impact to wilderness values. If development is minimal, the existing wilderness character of the WSA would remain essentially intact. If development is extensive, highly adverse impacts would occur to wilderness values in the long term. In the very long term (50 to 100 years) cessation of activities and rehabilitation may allow wilderness values to return.

Recreation Opportunities

Under wilderness management minor adverse impacts would occur to recreation opportunities. Wilderness designation would eliminate the use of vehicles within the WSA. This would decrease hunter use and sightseeing, which are identified as the major recreation uses at present. The primitive or wilderness type recreation values and the opportunities for solitude would be severely impacted or lost if full development of pre-FLPMA leases were to occur, or if development occurred on adjoining lands. However, as wilderness oriented recreation use of the WSA is minimal at present and is not anticipated to increase, this adverse impact would be minor. If development does not occur, these values would remain essentially as they are at present.

Cultural Resources

Under wilderness management no impacts would occur to cultural resources. Allowed oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under wilderness management minor adverse impacts would occur to visual resources. The WSA would be redesignated as VRM Class I, designed to ensure that the natural character of the WSA would be protected. However, allowed oil and gas activities on pre-FLPMA leases would adversely affect some of the visual values of the WSA.

RED LAKE

Noise

The noise level in the WSA would increase as a result of allowed oil and gas activities within and adjacent to the WSA. This increase is expected to have a moderately adverse impact. This increase may only be short term, primarily during drilling activities, but it could represent a long-term impact if production facilities were installed. The lack of topographic relief and dense vegetation would make any increase in noise noticeable. Negotiations would be initiated with the U.S. Air Force to alter the route of their low-level training flights.

Land Use Constraints

Wilderness management would not conflict with county zoning, but it would conflict with the management on adjoining state lands.

Socioeconomic Conditions

Under wilderness management increases in proprietors' income could accrue to the livestock industry. This would be due to the possible development of new water sources as a result of oil and gas exploration activities.

Under wilderness management there would be a minor decrease in the recreation expenditures, due to a decrease in hunter use and sightseeing, which are the primary recreation uses at present. However, the adverse effect on the recreation industry would be negligible.

Under wilderness management oil and gas activities would be allowed to occur on pre-FLPMA leases with at least nondegradation requirements applied; oil and gas activity would be allowed on some post-FLPMA leases with nonimpairment requirements applied. Minor increases in employment, income, revenues, and taxes attributable to oil and gas activities in this WSA are expected.

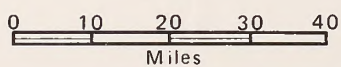
SUMMARY OF IMPACTS

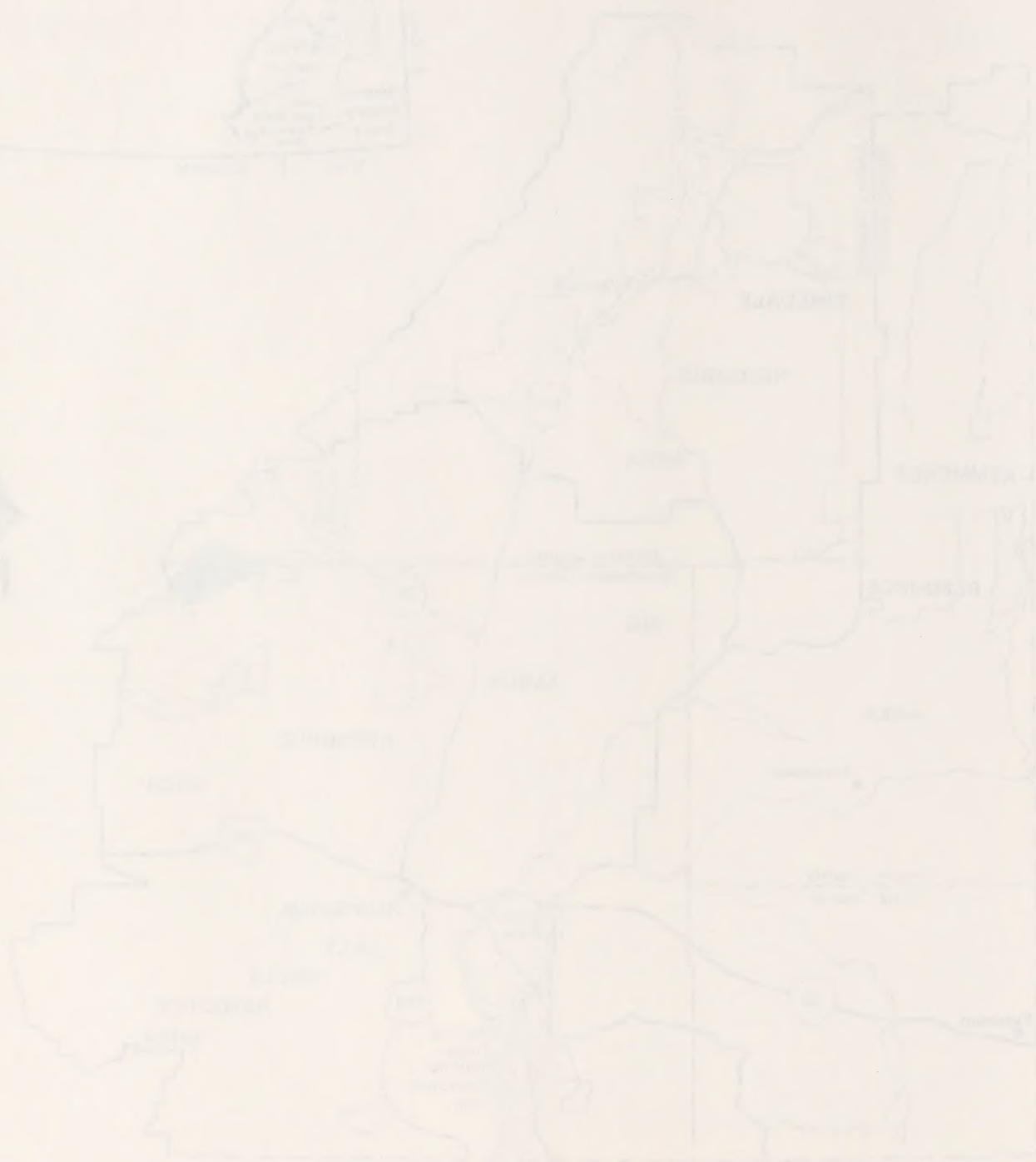
Site-specific impacts for the Red Lake WSA are summarized as follows: Implementation of the proposed action would result in minor to moderately adverse impacts to the present natural resource base. Wilderness designation would result in very little change from the existing situation. Minor adverse impacts would occur to the present natural resource base under wilderness management. The adverse impacts occurring under the proposed action and the wilderness alternative would occur as a result of increased oil and gas activities.

Wilderness management would provide greater protection to natural resources, due to the low percentage of pre-FLPMA leases (30 percent) in the WSA. This would limit disturbance on 70 percent of the WSA and require effective rehabilitation of disturbed areas. Wilderness management would protect a portion of the unique Killpecker Sand Dunes for scientific studies of sand dune ecology and activity.

Under the proposed action highly beneficial impacts would occur to present socioeconomic conditions and the oil and gas industry. Wilderness management would also have a beneficial impact on socioeconomic conditions and the oil and gas industry, although the beneficial impacts would be minor. Beneficial impacts occur under each alternative because mineral development could take place. Livestock management may also derive minor beneficial impacts under either alternative, if new water sources are developed as a result of oil and gas exploration activities.

Recreation opportunities would not be affected by the proposed action, but wilderness management would cause minor adverse impacts, due to the elimination of vehicles in the WSA. Wilderness values would be severely impacted under both the proposed action and wilderness management. The flat terrain of the WSA would not conceal even minimal oil and gas activity, severely impacting the wilderness values.





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CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

This WSA is located in northeastern Sweetwater County, approximately 52 miles northeast of Rock Springs (see Map HB-1). Honeycomb Buttes WSA is approximately 13 miles wide by 8 miles long at its widest points and contains 41,620 acres. The Honeycomb Buttes are one of the best examples of badland topography in Wyoming. The WSA contains several different terrain types, ranging from sagebrush hills and greasewood flats surrounding the badlands, to the eroding buttes themselves with their many bluffs, small draws, and side canyons. The WSA contains valuable big game habitat (pronghorn antelope, mule deer, and elk). Public comments generally supported preservation of the area as wilderness.

This site-specific analysis of the Honeycomb Buttes WSA analyzes the impacts of wilderness and nonwilderness management. In all alternatives considered in the District-wide Analysis, the Honeycomb Buttes WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternatives 1 and 2, the WSA would be managed as wilderness; under Alternative 3 the WSA would be under nonwilderness management.

PROPOSED ACTION AND ALTERNATIVE

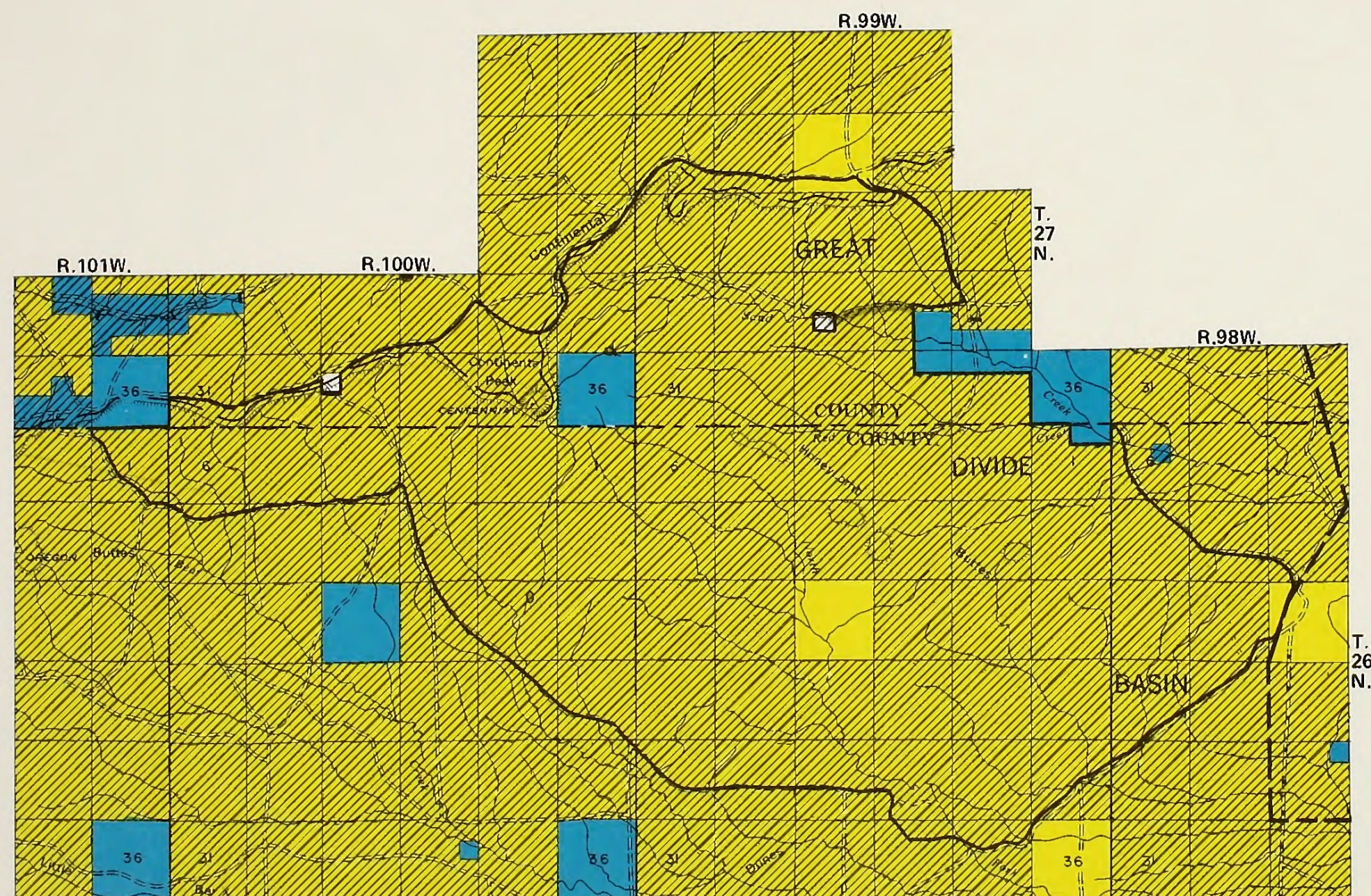
The proposed action is to recommend to the President, via the Secretary of the Interior, that this WSA be designated wilderness. Wilderness designation would provide increased protection to the wilderness values as well as other natural resources. The State of Wyoming surface and mineral ownership within the WSA would be exchanged for similar public lands elsewhere, as the Governor's office has stated that Wyoming lacks the authority to manage wilderness (see Appendix A).

The alternative to the proposed action is to manage the Honeycomb Buttes WSA as nonwilderness. Under nonwilderness management the WSA would be managed under the guidelines of the Big Sandy Management Framework Plan (MFP). Specific decisions contained in the MFP may be obtained from the Big Sandy Resource Area Office and key decisions are listed on Table D-3 in the District-wide Analysis.

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values in the Honeycomb Buttes WSA. Other alternatives were not considered realistic or as responsible resource management under the Federal Land Policy and Management Act of 1976.



Close up of Honeycomb Buttes WSA.



CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Honeycomb Buttes WSA is characteristic of the semiarid cold desert. Average daytime temperatures for the area range from 60–65° F. in July to 5–10° F. in January with a growing season of approximately 170 days for grasses.

The area receives approximately ten inches of precipitation annually, with a little more than half in the form of snow. The prevailing winds are generally from the west. Wind speeds normally average 15 mph, but gusts may reach as high as 82 mph preceding strong frontal passages. The highest wind speeds normally occur in late winter and spring.

AIR QUALITY

Within the Honeycomb Buttes WSA air pollution levels are low. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) do not exceed allowable standards (Science Applications, Inc. 1980). Particulate matter, spawned by the combination of wind and an arid countryside, results in some degree of “natural” pollution.

TOPOGRAPHY

The Honeycomb Buttes WSA contains several different terrain types, ranging from sagebrush hills and greasewood flats surrounding the badlands, to the eroding buttes themselves with their many bluffs, small draws, and side canyons. The area contains bright and varied colors due to the green, red, gray, white, yellow, and other colored layers of the Cathedral Bluffs Tongue of the Wasatch Formation.

The WSA lies entirely within the Great Divide Basin, a shallow depression nearly 100 miles long from east to west, and a little more than 50 miles wide. The basin has interior drainage only, and is literally perched on the Continental Divide. The elevation of the WSA ranges from 8,431 feet on top of Continental Peak (local high point in the Continental Divide) to flat range lands at about 6,900 feet.

GEOLOGY

Fluviatile and lacustrine rocks of Eocene age (the Wasatch, Green River, and Bridger formations) outcrop over most of the area. The Green River Formation is of lacustrine origin and has the form of a great lens or pile of lenses, with an enormous volume of fluviatile sediments. The fluviatile sediments have been divided into the Wasatch and Bridger formations. The Green River interfingers and intertongues with both the Wasatch and Bridger formations. Unexposed rocks include about 25,000 feet of sedimentary rocks which range in age from Paleocene to Cambrian overlying the crystalline Precambrian basement.

Mineral Resources

Hydrocarbons are the most valuable potential mineral resources of the Honeycomb Buttes WSA. Both source rocks and potential reservoir rocks are found within the WSA. The WSA is available for oil and gas leasing and is almost totally leased at present, with most of the area (approximately 90 percent) under pre-FLPMA leases (see Map HB-2). No producing wells or fields occur in the immediate vicinity of the WSA.

The oil and gas development potential for the WSA has been rated low in the BLM mineral report (BLM 1981e). Four unit agreements cover most of the WSA (Centurion, Hourglass, Harris Slough, and Lost Valley). Exploration wells were drilled in each of the units, but they were unsuccessful and were subsequently abandoned. Exploration continues in areas to the south, outside the WSA, but only one well near the Oregon Buttes WSA (see Map OB-2, Oregon Buttes Site-Specific Analysis) has been successful. This discovery, coupled with other recent discoveries in the Great Divide Basin may indicate that oil and gas fields exist in the Whitehorse Creek and Oregon Buttes WSAs, but the fields run to the south of Honeycomb Buttes WSA.

About one-third of Honeycomb Buttes WSA is included within two coal designations. This area was included within a coal lands withdrawal by Executive Order (November 15, 1910) and within a Minerals Management Service coal classification order. This WSA is not within a Known Recoverable Coal Resource Area. Although no coal

HONEYCOMB BUTTES

beds outcrop within the WSA, it is underlain by a coal-bearing sequence approximately 1,200 feet thick. The coal-bearing sequence has an aggregate thickness of as much as 100 feet of coal and contains several coal beds more than 15 feet thick. The economic cutoff point for subsurface mining, as determined by the Minerals Management Service, is 3,000 feet. The coal present in the WSA is near this depth or deeper. The Honeycomb Buttes WSA has low potential for economic development of the coal resource.

Some oil shale occurs in the Wilkins Peak Member of the Green River Formation in the WSA, but the beds are thin and low grade. The oil shale resource has a low development potential in the Honeycomb Buttes WSA.

North of the WSA on the southeast edge of the Prospect Mountains, uranium mineralization occurs in sandstone and conglomerate which are probably in the Wasatch Formation. In the WSA the formations of major interest appear to be Tertiary in age. A large portion of the WSA has been staked for uranium and most of these claims are pre-FLPMA mining claims. However, at present there is no development of the uranium in the area. The WSA has a low development potential for economic deposits of uranium.

Several placer gold claims occur in the WSA. The claims appear to have been staked on conglomerate deposits occurring in the Wasatch Formation. A field check of these claims in August of 1981 did not show any recent activity and no gold production has been reported from these claims. Gold has a low development potential for the WSA.

Sediment deposits of Quaternary age sand and gravel outcrop in the Honeycomb Buttes WSA. These deposits could be used as a source of gravel. At present, there is no nearby development and subsequently no demand for this resource. The resource has a low development potential at present. However, these deposits could be used as a gravel source if oil and gas development increases significantly in the vicinity of these deposits. The resource would then have a higher development potential.

Paleontological Resources

Marine fossils and other paleontological resources were noted in this WSA during the intensive wilderness inventory. McGrew and Bown (1976) confirm the potential for further finds in this area.



Winter sunset on Continental Peak.

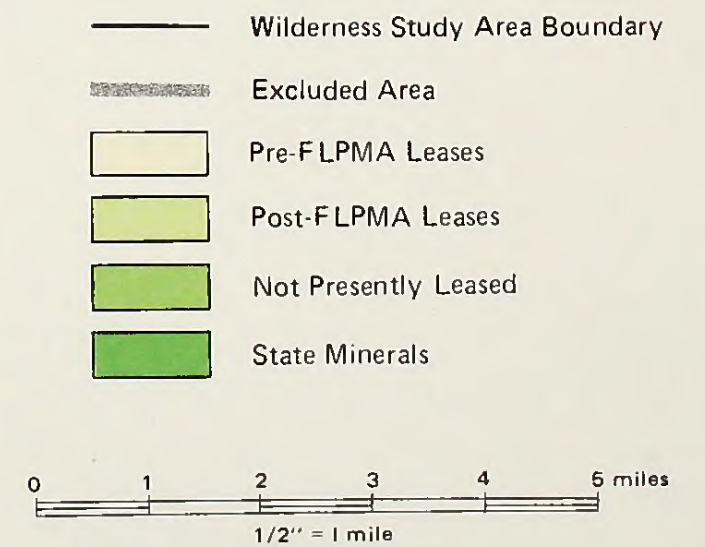
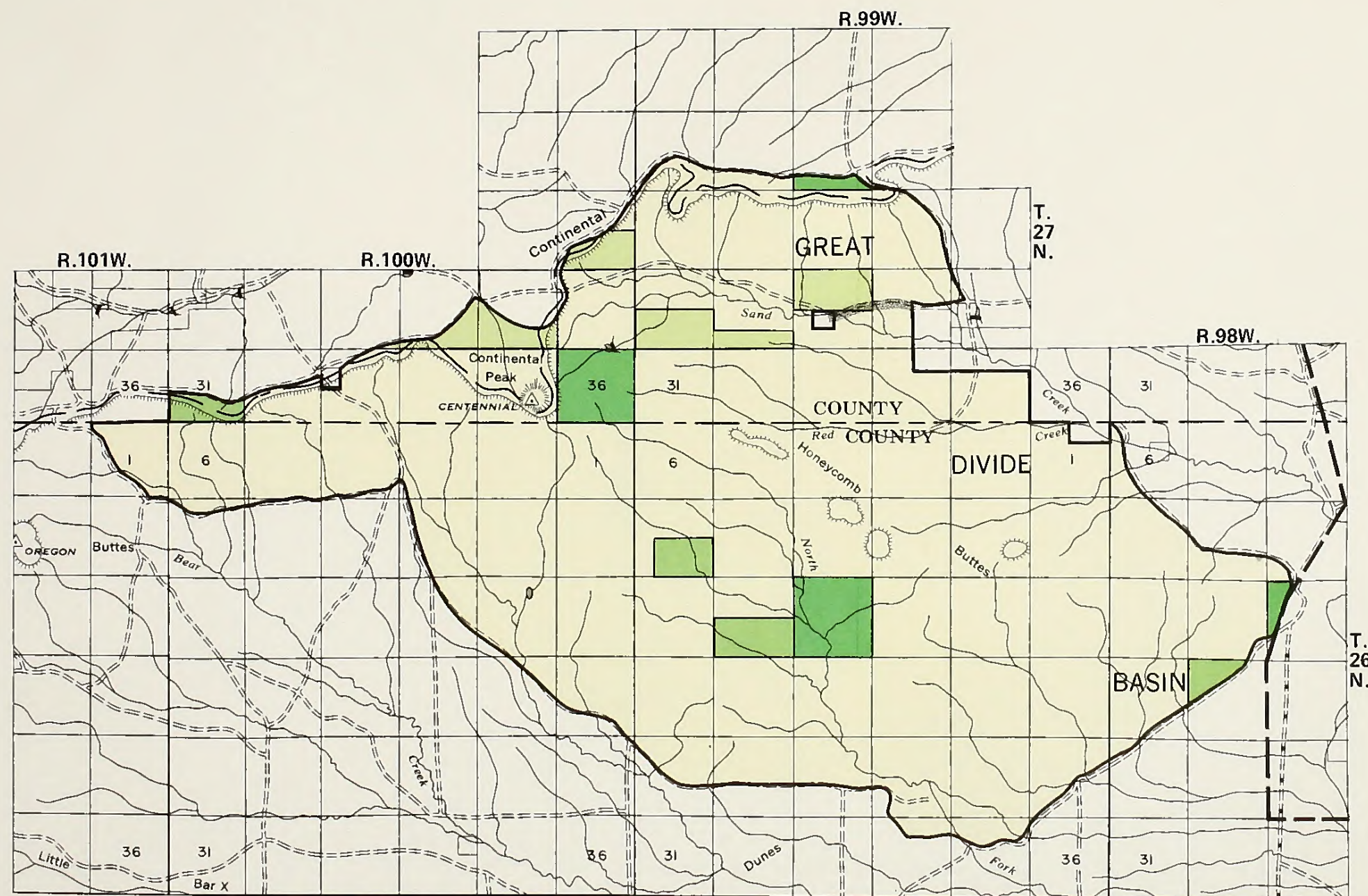
SOILS

Nine broad soil types, with relatively equal distribution occur in the Honeycomb Buttes WSA. They include: (1) shallow soils (steep mountain slopes); (2) shallow soils (residual uplands); (3) heavy saline soils (alluvial fans); (4) badlands; (5) dune land; (6) stabilized dunes; (7) steep shallow soils; (8) moderately deep soils (residual uplands); and (9) nonvegetated playas. See Appendix F for detailed descriptions of these soil types. Erosion susceptibility classes within the WSA range from moderate to severe, indicating identified erosion problems.

WATER RESOURCES

The WSA has no perennial streams, however, there are numerous intermittent streams which comprise the bulk of the water in the area. The source of this water is primarily annual runoff during spring and early summer as a result of snowmelt and some seeps and springs. There are several springs on the western boundary of the WSA (Oregon Buttes and Honeycomb Buttes boundary). These springs provide water most of the year for two livestock reservoirs and a tributary of Bear Creek. The quality of the spring water is adequate for human consumption at its source.

There are nine reservoirs found within the WSA, all of which contain water and show signs of usage. The condition of the reservoirs, which were developed for livestock, varies from complete disrepair to functional and operative.



Map HB-2
Honeycomb Buttes WSA
OIL AND GAS LEASES

HONEYCOMB BUTTES

Due to the lack of vegetation in the buttes, the area is prone to severe runoff and subsequent local flash flooding. Although there is no charted floodplain, the flash flooding occurs along the tributaries of Bear Creek (see Map HB-1).

VEGETATION

The area within the WSA was included in a range survey conducted in 1976. Vegetation types were mapped and transects were run to determine vegetation production. Data from this source were used to describe the vegetation. Vegetation in the WSA is best suited for grazing and wildlife habitat. The WSA is not a productive area. Table HB-1 lists the approximate acres of each vegetation type within the WSA.

The dominant characteristic of the WSA is badlands which constitute approximately 26 percent of the WSA. The badlands are completely devoid of vegetation. Since many of the soils were developed from the saline shale outcrop parent material, much of the vegetation characterizing the remainder of the WSA is salt tolerant.

The sagebrush-grass type (approximately 43 percent of the WSA) is common throughout the WSA. Big sagebrush dominates the overstory and thickspike wheatgrass, Indian ricegrass, Sandberg bluegrass, and bottlebrush squirreltail are the most common grass species. As with other types, a variety of annual and perennial forbs occur.

The saltbush vegetation type (approximately 28 percent of the WSA) is the other most common type. This type ranges from essentially pure stands of Nuttall saltbush to mixed stands of Nuttall saltbush and birdsfoot sagebrush. These stands are quite variable, with associated understory species ranging from nonexistent to very common. Species associated with the saltbush and birdsfoot sagebrush include bottlebrush squirreltail, Indian ricegrass, western wheatgrass, and various forbs.

Along the drainages small areas of the greasewood type occur (approximately three percent of the WSA). Black greasewood, big sagebrush, and rubber rabbitbrush are the most common species. Understory vegetation consists of grass species and an occasional clump of basin wildrye.

The large seeded bladderpod (*Lesquerella*



Rabbitbrush and lower buttes.

macrocarpa), a candidate for proposal as a threatened species (*Federal Register*, Volume 45, No. 242, 15 December 1980), is located in the WSA on bentonitic clays. It is a member of the mustard family and has a biennial growth cycle. An inventory completed in 1981 indicated that this species is sensitive and will be delisted as a candidate for threatened status.

HONEYCOMB BUTTES

Table HB-1
VEGETATION TYPES

Type	Percent of WSA	Acres
Sagebrush-grass	43	17,851
Saltbush	28	11,845
Badlands	26	10,676
Greasewood	3	1,248
Totals	100	41,620

WILDLIFE

The WSA provides excellent wildlife habitat. In this section, only those major species which commonly occur in the WSA will be discussed. A complete list of animals found in this WSA is available for review in the Big Sandy Resource Area Office.

Valuable big game habitat is found within the WSA. Pronghorn antelope use the WSA during the summer. Mule deer use the northern portions of the WSA for yearlong range, moving to the northwestern sections during severe winter weather. Elk generally use the northwestern portions of the WSA during the summer, and then migrate to the south-central sections in winter.

Raptor habitat in the WSA is excellent, due to the availability of suitable nesting sites. Although aerial observations have been conducted in the WSA, intensive inventories are lacking. Golden eagles, prairie falcons, great horned owls, and ferruginous hawks have been observed within the WSA.

Predator species including mountain lions, swift foxes, and coyotes have been identified as using the Honeycomb Buttes WSA. Mountain lion habitat is generally limited to the extreme west portion of the WSA and bobcats use the entire WSA. However, both bobcats and mountain lions are not considered to be common. A swift fox was sighted on the WSA's southeastern boundary on September 22, 1975, and coyotes are common throughout the WSA.

WILD HORSES

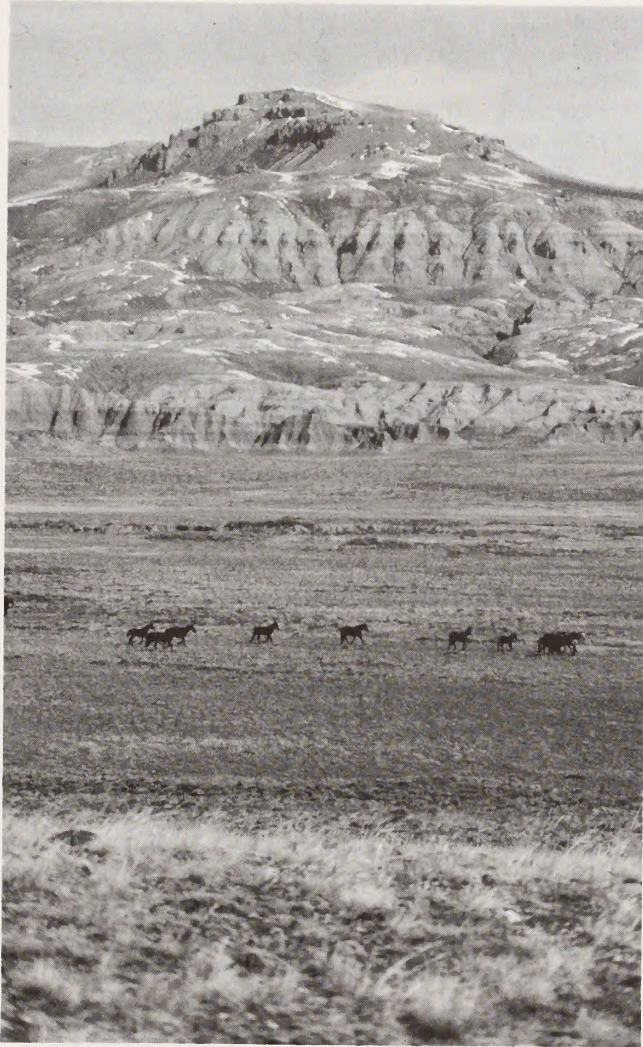
The WSA is within the Divide Basin Wild Horse Herd Management Area (WHHMA) (see District-



Raptor nests are found throughout the buttes.

wide Analysis, Chapter 2, Map D-8). An inventory in February 1982 indicated that there are 2,307 horses in the WHHMA. The management objective for the WHHMA is to reduce the numbers to 500 by fall 1984. Visitors to the WSA can expect to see herds in the area, especially in the summer. During the winter many of the horses move to the southern portion of the WHHMA, south of the WSA boundaries.

HONEYCOMB BUTTES



Wild horses near Continental Peak.

LIVESTOCK GRAZING

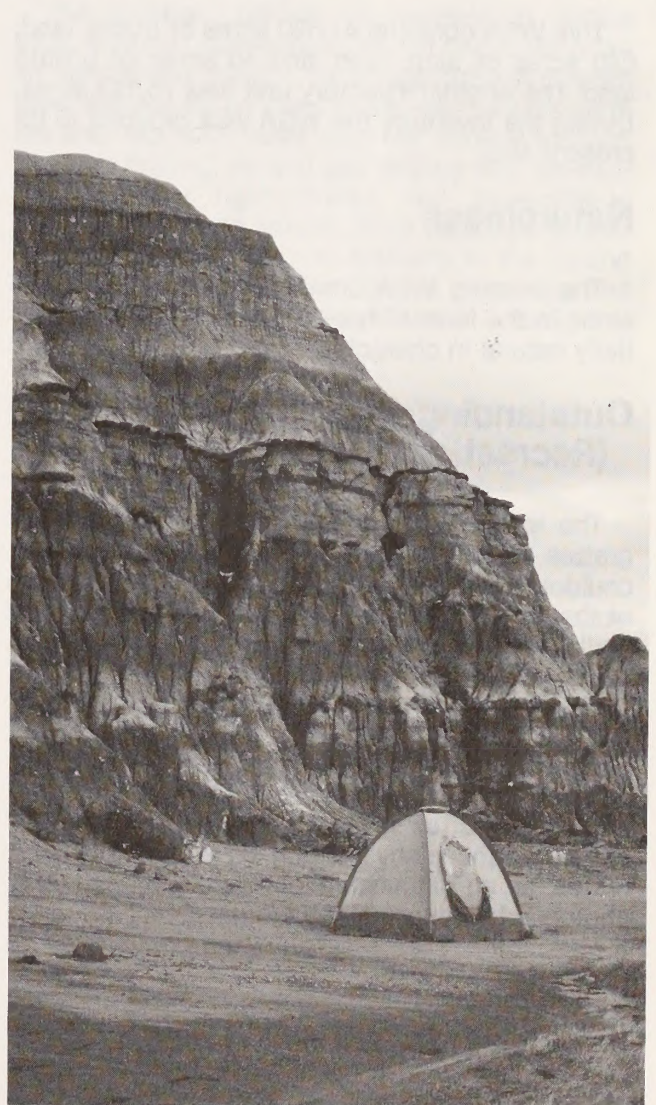
The WSA is located in both the Red Desert and the Continental Peak grazing allotments. Detailed allotment management plans for these areas are available for review in the Big Sandy Resource Area Office. The numbers listed below do not reflect actual use for livestock; the total AUMs include use by wildlife, wild horses, etc., and areas unsuitable for livestock grazing.

The Red Desert Allotment has an approximate grazing capacity of 15,391 AUMs for cattle or 18,756 AUMs for sheep on all public lands within

the allotment. Currently, six permittees graze cattle or sheep on the allotment, with the use occurring from May 1 until December 15. One other permittee uses the allotment for trailing sheep during the spring and fall.

The Continental Peak Allotment has an approximate grazing capacity of 5,717 AUMs for cattle or 6,997 AUMs for sheep on all public lands within the allotment. Currently, two permittees graze sheep on the allotment, with the use occurring from May 1 until November 30. Two other permittees have privileges to trail sheep in the allotment during the spring and fall, but that privilege is seldom exercised.

Within the Honeycomb Buttes WSA, the approximate grazing capacity for cattle is 1,919 AUMs or 2,988 AUMs for sheep.



Camping near a small Bear Creek tributary.

HONEYCOMB BUTTES

WILDERNESS INCLUDING RECREATION

The BLM inventoried the Honeycomb Buttes area and all contiguous lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory, the Bureau determined that the Honeycomb Buttes area met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Size

This WSA contains 41,620 acres of public land, 640 acres of state land, and 40 acres of private land. The original inventory unit was 75,123 acres. During the inventory the WSA was reduced to its present size.

Naturalness

The existing WSA contains some minor intrusions in the form of two-track trails, but is essentially natural in character.

Outstanding Opportunities (Recreation)

The many cliffs, ridges, draws, and secluded grottos provide numerous areas where a person could experience solitude. The superb coloration of the buttes enhances one's appreciation for the undisturbed natural setting of the Honeycombs.

The WSA provides opportunities for primitive and unconfined recreation. Two of the opportunities available in the area include camping and rockhounding. Nontechnical climbing on the clay and rocky buttes is an outstanding experience. Caving in the many erosion caves found in the buttes is an unusual experience. Hunting and photography opportunities are good.



Caving in the Honeycomb Buttes WSA.

Supplemental Values

There is a wide variety of wildlife species in the WSA. The agates, jade, and petrified wood found in the WSA provide outstanding rockhounding values.

CULTURAL RESOURCES

The WSA has not undergone a cultural resource inventory. However, a number of archeological sites exist in the WSA which are evidence of early American Indian culture. These sites have been noted, but since they have not been inventoried or intensively investigated, their exact significance is unknown.

A portion of the old Point of Rocks-South Pass Stage Route runs through the western portion of the WSA. This route was used to carry freight and passengers between the South Pass City gold mining district and the Union Pacific railroad from 1868 to about 1900. At one time it was a major transportation corridor which helped settle the west. Certain sections of this route still exhibit the original wagon ruts although most of the "road" is now occasionally used by motor vehicles. Trail preservation along this route is variable.

HONEYCOMB BUTTES

VISUAL RESOURCES

The Honeycomb Buttes WSA lies within three Visual Resource Management (VRM) Classes. The major portion of the WSA (approximately 60 percent) is classified as VRM Class II. Small portions of the WSA on the north (approximately 30 percent) lie within Class IV, and portions of the southwest area (approximately 10 percent) lie within Class III. The basic management guidelines for these visual resource management classes are described in detail in the District-wide Analysis, Chapter 2, Visual Resources.

The vivid colors of Honeycomb Buttes WSA are striking. Visibility from the butte tops and Continental Peak is outstanding, offering miles of scenic vistas from the Wind River Mountain Range on the north to the Uinta Mountain Range to the southwest.

NOISE

Existing noise levels within the WSA are low with occasional increases from oil and gas activities. The oil and gas activities do not presently cause much disturbance in the WSA except for an occasional truck passing nearby and during geophysical exploration activities, particularly where explosives are used.

LAND USE CONSTRAINTS

The lands surrounding the Honeycomb Buttes WSA are predominantly public lands administered by BLM (see Map HB-1). One state-owned section

(section 36, T. 27 N., R. 100 W.) lies entirely within the WSA and several additional parcels are adjacent to the WSA on the northern and eastern boundaries. The state also holds the mineral rights on section 16, T. 26 N., R. 99 W., as well as two partial sections on the northern and eastern WSA boundaries.

The northern portion of Honeycomb Buttes WSA is within Fremont County. The county has elected not to adopt the traditional zoning approach. Instead, improvement standards have been developed which identify the limits of the effect of such land developments as waste water and solid waste disposal, traffic generation, etc. Generalized land use districts are established which recognize the capability and suitability of the land.

The southern portion of Honeycomb Buttes WSA is within Sweetwater County and is zoned as an agricultural district. As an agricultural district, there are numerous uses which may be allowed in the area. Some of these uses are: mineral exploration and drilling; oil and gas drilling and development; railway rights-of-way; and transmission lines, stations, and towers. More detailed information on zoning districts is available in the Zoning Resolution of Sweetwater County, Wyoming, and in the District-wide Analysis, Chapter 2, Land Use Constraints.

SOCIOECONOMIC CONDITIONS

This WSA is located in Sweetwater and Fremont counties. The current socioeconomic conditions of these counties are addressed in the District-wide Analysis, Chapter 2, Socioeconomic Conditions.

WORKING WITH

Working with the community is a key element of the planning process. It involves understanding the needs and concerns of the people who will be affected by the project. This can be done through a variety of methods, including public meetings, surveys, and focus groups.

One of the most important aspects of working with the community is to ensure that the process is transparent and inclusive. This means that all interested parties should have the opportunity to be heard, and that the information gathered is used to inform the decision-making process.

Working with the community can also help to build trust and understanding between the project team and the people affected. This is important for ensuring that the project is implemented successfully and that the community is satisfied with the results.

SOCIOECONOMIC CONDITIONS

Socioeconomic conditions refer to the social and economic factors that influence the quality of life of a community. These factors include income, education, health, and housing.

Understanding socioeconomic conditions is important for planning because it helps to identify the needs and challenges of the community. This information can be used to develop strategies to improve the quality of life and to ensure that the project is equitable and sustainable.

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Working with the community can also help to build trust and understanding between the project team and the people affected. This is important for ensuring that the project is implemented successfully and that the community is satisfied with the results.

NOISE

Noise is a common problem in many communities, and it can have a significant impact on the quality of life. Noise can be caused by a variety of sources, including traffic, construction, and industry.

LAND USE CONSTRAINTS

Land use constraints are factors that limit the way in which land can be used. These constraints can include zoning laws, environmental regulations, and physical features such as topography and water bodies.

Understanding land use constraints is important for planning because it helps to identify the opportunities and challenges of the community. This information can be used to develop strategies to improve the quality of life and to ensure that the project is equitable and sustainable.

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CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumptions were used for impact analysis:

1. The BLM mineral report addressing the mineral potential of this WSA assigns a low potential rating for oil and gas development. This rating indicates that oil and gas exploration may continue, but that development is unlikely. It is reasonable to project that exploration would continue under wilderness management, considering 90 percent of the WSA is pre-FLPMA leased and 3 percent is state leased, but the lack of oil and gas discoveries would preclude oil and gas development. Leases would be allowed to expire.
2. Although the Honeycomb Buttes WSA has been claim staked for uranium and these claims are largely pre-FLPMA, the WSA has low development potential for discovering an economic deposit of uranium minerals. No development for uranium or gold is assumed, based on low mineral potentials.

IMPACTS OF THE PROPOSED ACTION (WILDERNESS DESIGNATION)

Air Quality

Under the proposed action no impacts would occur to air quality. Pollution levels are currently low, and there would be little, if any, oil and gas activity in the area significant enough to cause air quality to deteriorate.

Topography

Under the proposed action no adverse impacts

would occur to topography. However, there is a possibility that the unique topographic features of Honeycomb Buttes may be altered slightly, due to exploration activities on pre-FLPMA and state leases.

Paleontological Resources

Under the proposed action no impacts would occur to the paleontological resources of the WSA.

Soils

Under the proposed action minor beneficial impacts would occur to soils. Surface disturbance to soils would decrease in the short term. Oil and gas exploration activities on pre-FLPMA leases would cause a certain amount of surface disturbance, but for the most part this would decrease as leases expire. All motor vehicle use would be eliminated in the short term (after pre-FLPMA leases expire), thereby limiting erosion caused by vehicle use.

Water Resources

Under the proposed action no impacts would occur to water resources. Any possible impacts from surface-disturbing activities (e.g., oil and gas exploration activities on pre-FLPMA leases) to small intermittent streams would be mitigated through application of at least nondegradation requirements.

Vegetation

Under the proposed action minor beneficial impacts would occur to vegetation. Destruction of vegetation would decrease due to the elimination of motor vehicle use. In the short term the expiration of pre-FLPMA leases and cessation of exploration activities would decrease destruction of vegetation.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

HONEYCOMB BUTTES

Disturbance associated with oil and gas exploration could have a slightly adverse impact on the identified sensitive plant species (*Lesquerella macrocarpa*). However, it appears probable that oil and gas exploration on pre-FLPMA leases would be allowed, with application of at least nondegradation requirements to protect the sensitive plant species.

Wildlife

Under the proposed action minor beneficial impacts would occur to wildlife. Disturbing activities, such as oil and gas exploration on pre-FLPMA leases, would decrease in the short term, and the WSA could provide sanctuary for big game populations moving away from disturbance in other areas. The big game numbers inhabiting Honeycomb Buttes WSA may increase; however, the herd unit populations (which occupy an area much larger than the WSA) would not increase as a result of the wilderness designation of Honeycomb Buttes WSA.

Under wilderness management there would be little or no disturbance of nesting sites. There would probably be no change in the number of predators in the area.

Wild Horses

Under the proposed action no impacts would occur to wild horses in the WSA. There would be no change in the management of the wild horse herds. Management objectives would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Allowed oil and gas activities would not adversely affect wild horses. In accordance with the special exceptions allowed under the wilderness management policy, special permission would be required to allow construction of a horse trap and low-level helicopter use for periodic roundups.

Livestock Grazing

Livestock grazing and management would not be affected by wilderness designation of the WSA. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease of forage available to livestock.

If the WSA is designated wilderness, it is anticipated that the number of range improvements that could be implemented would decrease slightly. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock. Existing and future improvements could be maintained with motor vehicles or motorized equipment only if no other alternatives exist. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determined that other alternatives (such as horseback) do not exist and wilderness values would not be impaired. This motor vehicle restriction could cause some loss of efficiency in livestock management.

Wilderness Including Recreation

Wilderness Values

Under the proposed action minor beneficial impacts would occur to wilderness values. The wilderness characteristics unique to the Honeycomb Buttes WSA would essentially remain the same. Wilderness designation may initially draw a few more people to the area, due to the increased publicity associated with wilderness designation, but this would probably level off in the long term.

Recreation Opportunities

Recreation opportunities would not be affected by wilderness designation. Hiking, backpacking, and horseback riding may increase slightly over the short term, due to the increased publicity associated with wilderness designation; however, due to the limited amount of potable water, these activities would probably return to their former levels in the long term.

Wilderness designation would decrease the amount of hunter-days spent in the WSA initially. Hunters in the high desert have traditionally used motor vehicles. As wilderness management would exclude most vehicle use, this type of hunting would not occur. However, in the short term, the elimination of motor vehicle use and less man-made disturbance in the WSA as pre-FLPMA leases expire, could improve hunting quality. The WSA could provide sanctuary for big game populations moving away from disturbance in other areas. The big game numbers inhabiting Honeycomb Buttes WSA may increase, improving hunter opportunities. However, wilderness

HONEYCOMB BUTTES

designation of the Honeycomb Buttes WSA would not cause the herd unit populations (which occupy an area much larger than the WSA) to increase. Hunter-days would remain at approximately the same levels.

Cultural Resources

Under the proposed action minor beneficial impacts would occur to cultural resources. Allowed oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction. Wilderness designation would offer some protection to cultural values, due to the limited access for motor vehicles. Vandalism and destruction of cultural artifacts may be slightly less under wilderness designation.

Visual Resources

Under the proposed action minor beneficial impacts would occur to visual resources. If the WSA is designated wilderness, BLM would upgrade the VRM classification to Class I and would manage it as such, offering greater protection of the visual resources. However, due to allowed oil and gas exploration activities on pre-FLPMA leases, the beneficial impacts to visual resources are reduced.

Noise

The noise level in the WSA is expected to decrease slightly under wilderness management. Oil and gas exploration activities on pre-FLPMA leases would cause a slight increase in noise levels, but this would be offset by the elimination of noise-producing vehicles within the WSA.

Land Use Constraints

Wilderness designation would not conflict with county zoning, but it would conflict with the management of the state lands within and adjoining the WSA. The area would remain an agricultural zone. No developments (factories, plants, etc.) would be permitted in the WSA, unless associated with pre-FLPMA lease development. Most rights-of-way for roads, pipelines, etc., would not be allowed unless wilderness values were

unimpaired. These rights-of-way would be considered on a case-by-case basis.

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives is a composite of the general trend in resource use for all the WSAs.

The level of livestock grazing and recreation use of the WSA are not expected to change as a result of the proposed action. Therefore, receipts from livestock production and recreation expenditures are not expected to be impacted.

Under the proposed action oil and gas exploration and development would be allowed, primarily on pre-FLPMA leases in the WSA. If discoveries are made (the WSA is classified as having low potential for oil and gas), the level of regional employment, income, revenues, and taxes would be expected to increase.

IMPACTS OF THE ALTERNATIVE ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Air quality within the Honeycomb Buttes WSA would not change significantly under non-wilderness management. Pollution levels are currently low, and there would be little, if any, oil and gas activity in the area significant enough to cause air quality to deteriorate.

Topography

Under nonwilderness management minor adverse impacts would occur to topography. The unique topographic features of Honeycomb Buttes WSA may be altered by oil and gas exploration activities.

HONEYCOMB BUTTES



Climbing the eroded buttes.

Water Resources

Under nonwilderness management no impacts would occur to the water resources within the Honeycomb Buttes WSA. Any possible impacts from surface-disturbing activities (oil and gas exploration) to small intermittent streams would be reduced by applying site-specific mitigation requirements.

Vegetation

Under nonwilderness management minor adverse impacts would occur to vegetation. Disturbance to vegetation may increase slightly as oil and gas exploration continues in the Honeycomb Buttes WSA.

Disturbance to vegetation caused by off-road vehicle use (recreation primarily) would probably not increase from the present situation. Vehicle use would be restricted to existing roads and trails (except where approved, as in oil and gas exploration). Disturbance associated with oil and gas activities could have an adverse impact on the identified sensitive plant species (*Lesquerella macrocarpa*). It appears probable that most oil and gas activities could be allowed, with application of site-specific mitigation measures to protect the sensitive plant species.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Wildlife

Under nonwilderness management no impacts would occur to wildlife. Only minimal disturbance (oil and gas exploration activities) beyond present levels is anticipated in the WSA. Big game species inhabiting the WSA would not experience population decreases as a result of nonwilderness management. Disturbance to raptor nesting sites would not increase beyond present limited disturbances.

Predator numbers are not expected to be affected by nonwilderness management. The WSA is only a small portion of their wide-ranging domain, and the management of the WSA would have minimal effect on their numbers.

Paleontological Resources

Under nonwilderness management minor adverse impacts would occur to paleontological resources, due to anticipated oil and gas activities.

Soils

Under nonwilderness management minor adverse impacts would occur to soils. Surface disturbance would probably increase slightly with continued oil and gas exploration in the area. Vehicle use would be restricted to existing roads and two-track trails, however, authorized off-road activities would continue to contribute to some soil erosion.

HONEYCOMB BUTTES

Wild Horses

Under nonwilderness management no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the Honeycomb Buttes WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Anticipated oil and gas exploration activities would not adversely affect the wild horses.

Livestock Grazing

Livestock grazing and management would not be affected by nonwilderness management. The amount or type of livestock use would not change from the present situation unless monitoring studies showed an increase or decrease in forage available to livestock. As oil and gas exploration continues, new access roads may be built, thereby improving access for livestock management. No new range improvements are planned for this area, but the potential for new improvements exists. Existing improvements could be maintained by conventional means.

Wilderness Including Recreation

Wilderness Values

Under nonwilderness management minor adverse impacts would occur to wilderness values. Wilderness values in the WSA would generally be diminished in the short term. However, due to the minimal amount of disturbing activities anticipated, and the possible expiration of leases if oil or gas is not discovered, the wilderness values may recover in the long term. The unique geological formations would continue to provide refuge, primitive and unconfined recreation opportunities, and opportunities for solitude. The large area of the WSA makes it easy to "hide" manmade intrusions. Site-specific mitigation requirements would be applied to prevent drilling on butte tops.

Recreation Opportunities

Nonwilderness management would not affect the recreation opportunities in the WSA. Motor vehicle use would be limited to existing roads and two-track trails. As off-road vehicle use in the WSA is minimal at present, these restrictions would not adversely affect recreation opportunities. Hiking, horseback riding, rockhounding, and photography in the WSA would remain at present levels. Hunt-

ing opportunities would remain at the same level; any increase or decrease in hunting quality would be dependent upon fluctuations in herd unit populations which occupy an area much larger than the WSA.

Cultural Resources

Under nonwilderness management no impacts would occur to cultural resources. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under nonwilderness management no impacts would occur to visual resources. The visual resource management classifications would not be changed. Any adverse impacts to visual resources would result from manmade intrusions. Site-specific intrusions may decrease local visual quality, but the overall visual integrity would remain intact. Once the intrusions are removed and reclamation is complete, the original scenic qualities may return.

Noise

The noise level in the WSA is not expected to change under nonwilderness management. Oil and gas exploration activities are not expected to increase within the WSA.

Land Use Constraints

Nonwilderness management would not conflict with county zoning, nor would it conflict with the management of state lands within and adjoining the WSA.

Socioeconomic Conditions

The level of livestock grazing and recreation use of the WSA are not expected to change as a result of nonwilderness management. Therefore, receipts from livestock production and recreation expenditures are not expected to be impacted.

Under nonwilderness management oil and gas

HONEYCOMB BUTTES

industry activity is expected to increase employment, income, revenues, and taxes as a result of exploration and/or development.

SUMMARY OF IMPACTS

Site-specific impacts for the Honeycomb Buttes WSA are summarized as follows: Implementation of the proposed action would result in minor beneficial impacts to the present natural resource base. Nonwilderness management would not affect the present natural resource base.

Under the proposed action minor beneficial impacts would occur to wilderness values. Under the nonwilderness alternative minor adverse impacts would occur to wilderness values. Recreation opportunities would not be affected by either the proposed action or alternative.

Under both the proposed action and the non-wilderness alternative, minor beneficial impacts would occur to the present socioeconomic conditions and the oil and gas industry.



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CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

The Oregon Buttes WSA is located in north-central Sweetwater County, approximately 30 miles northeast of Farson (see Map OB-1). The WSA contains 5,700 acres and is comprised entirely of public land. The buttes are a prominent landmark, rising out of the northwestern portion of the Red Desert to an elevation of 8,612 feet above sea level and 1,200 feet above the desert floor. The buttes possess a wide variety of vegetation types, most notably limber pine stands; and small, thick, isolated stands of aspen are also present. Numerous seeps display wet meadows. The WSA contains valuable big game habitat (elk, mule deer, and pronghorn antelope), and is also an important elk calving ground.

The WSA contains numerous manmade intrusions, including two seismograph lines and 13 two-track trails. Public comments generally did not support wilderness designation for Oregon Buttes WSA following the wilderness inventory process.

This site-specific analysis of the Oregon Buttes WSA analyzes the impacts of wilderness and non-wilderness management. In all alternatives considered in the District-wide Analysis; the Oregon Buttes WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternative 3, the WSA would be under nonwilderness management; under Alternatives 1 and 2, the WSA would be managed as wilderness.

PROPOSED ACTION AND ALTERNATIVE

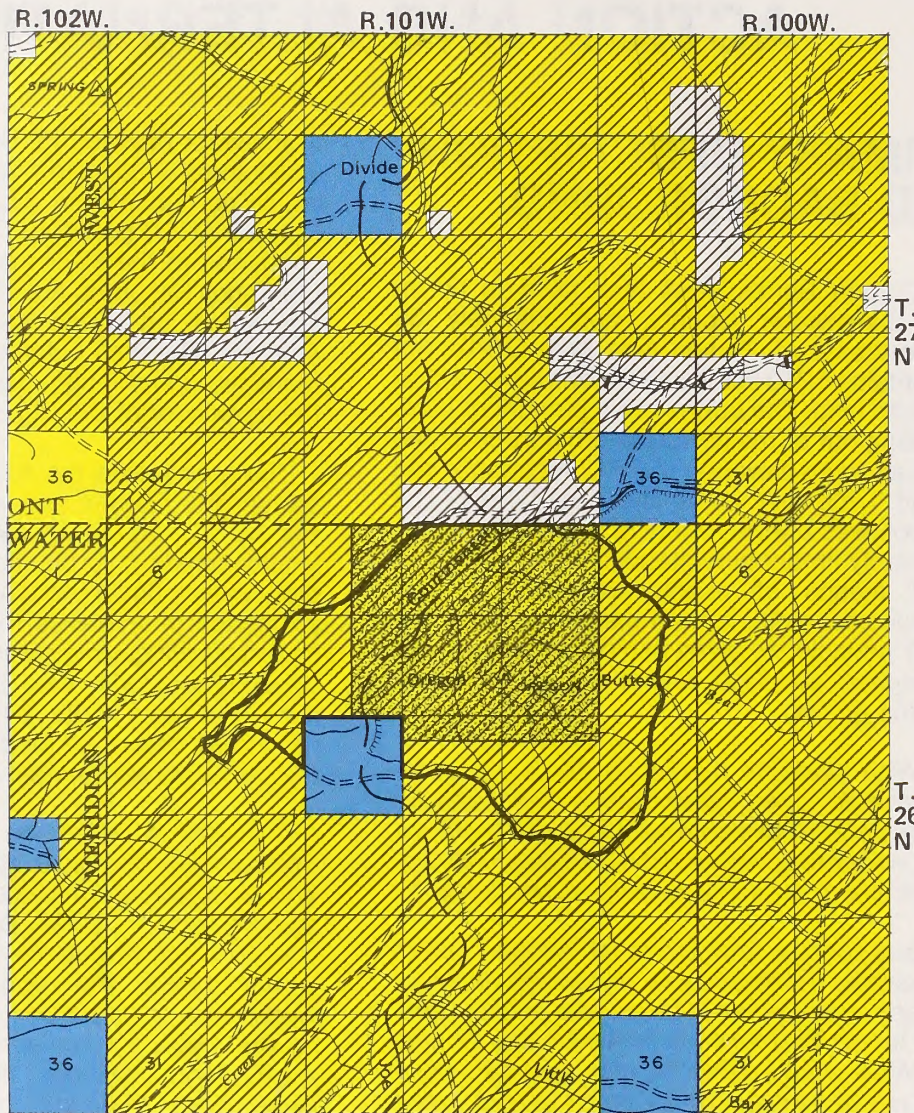
The proposed action is to recommend to the President, via the Secretary of the Interior, that this WSA not be designated wilderness. Under the proposed action the WSA would be managed under the guidelines of the Big Sandy Management




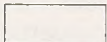


Framework Plan (MFP). Under MFP management 3,360 acres within the WSA are designated as the major portion of the 3,520-acre Oregon Buttes Cultural ACEC (see Map OB-1). Specific decisions contained in the MFP may be obtained from the Big Sandy Resource Area Office and key decisions are listed on Table D-3 in the District-wide Analysis. The area outside of the ACEC would be managed under multiple-use criteria applicable to the remainder of the Big Sandy Planning Unit.

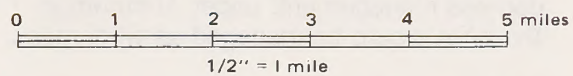
The area inside the ACEC will be managed to protect the historic and wildlife values for which the ACEC was designated. ACEC management would include: (1) protection of the butte tops from disturbance; (2) protection of key raptor habitat; (3) protection of scattered forest stands, as they are important elk calving areas; (4) limiting vehicle use to existing roads, with the possible closure of some two-track trails if their use interfered with the ACEC objectives; and (5) offering guidance to the public on appropriate camping locations.

The alternative to the proposed action is to manage the Oregon Buttes WSA as wilderness. The implications of wilderness management are summarized in Table D-1 of the District-wide Analysis. Constraints to wilderness management would make the activities allowed under wilderness or nonwilderness alternatives, as well as the impacts, very similar. The entire WSA is public land; however, pre-FLPMA oil and gas leases cover 75 percent of the WSA, and the area has moderate to high potential. This would increase management difficulties in preserving a true wilderness area, especially since successful drilling activities on the periphery of the WSA indicate that future drilling is likely to occur.

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values in the Oregon Buttes WSA. Other alternatives were not considered realistic or as responsible resource management under the Federal Land Policy and Management Act of 1976.



-  Wilderness Study Area Boundary
-  Oregon Buttes Cultural ACEC
-  Public Land (Administered by BLM)
-  Private Land
-  State Land
-  Federal Minerals



Map OB-1
Oregon Buttes WSA
LAND AND MINERAL STATUS

CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Oregon Buttes WSA is characteristic of the semiarid cold desert. Average daytime temperatures for the area range from 60–65° F. in July to 5–10° F. in January, with a growing season of approximately 150 days for grasses.

The area receives approximately 10 to 12 inches of precipitation annually, with a little more than half in the form of snow. The prevailing winds are generally from the west. Because of the topography of Oregon Buttes, severe wind turbulence is often encountered. Wind speeds normally average 15 mph, but gusts may reach as high as 82 mph, preceding strong frontal passages. The highest wind speeds normally occur in late winter and spring.

AIR QUALITY

Within the Oregon Buttes WSA air pollution levels are low. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) do not exceed allowable standards (Science Applications, Inc. 1980). Airborne particulate matter, spawned by the combination of wind and an arid countryside, results in some degree of “natural” pollution; wind also brings particulate pollution from nearby trona operations west of Green River. Visibility in the WSA is usually excellent, allowing scenic views in all directions from the top of the buttes.

TOPOGRAPHY

The Oregon Buttes dominate this WSA. The buttes are flat-topped, badland bluffs, which rise about 1,200 feet above the plains to an elevation of 8,612 feet. The Continental Divide crosses the WSA and splits near Oregon Buttes. One branch of the divide runs east across the north boundary of the WSA, and the other branch runs south from Oregon Buttes. The split forms a large basin called the Great Divide Basin. This basin has an interior drainage system, and no waters flow out of this basin. Streams draining the WSA west of the buttes eventually drain into the Green River.

GEOLOGY

The Oregon Buttes WSA lies on a structural platform which joins the Rock Springs Uplift to the Wind River Mountain Range (Zeller and Stephens 1969). The WSA is split by the Continental Divide, with the western portion being in the Green River Basin and the eastern portion being in the Great Divide Basin.

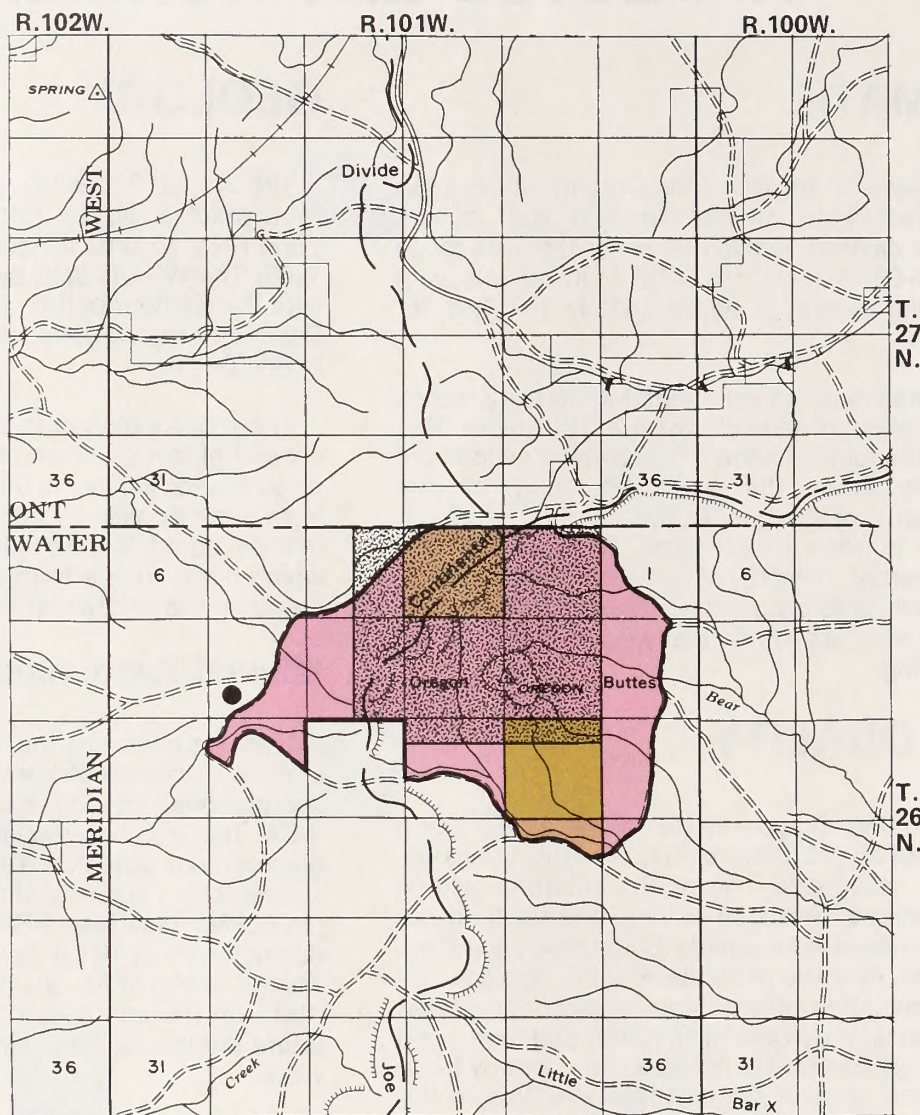
The rocks exposed in the Oregon Buttes WSA consist of lacustrine and fluvial deposits which total about 2,000 feet in thickness and range in age from early Eocene to Pliocene. Unexposed rocks include about 25,000 feet of sedimentary rocks which range in age from Paleocene to Cambrian, overlying the crystalline Precambrian basement.







Mineral Resources

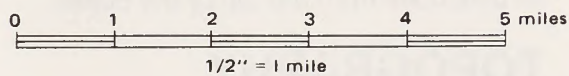
Hydrocarbons are the most valuable potential mineral resources of the WSA. Both source rocks and potential reservoir rocks are found within the WSA. The area has moderate to high oil and gas development potential (BLM 1981e). The WSA is almost totally leased and most of these leases are pre-FLPMA (see Map OB-2). Prior to 1981, no producing wells or fields occurred in the immediate vicinity of the WSA. Successful drilling activities (1981) on the periphery of the WSA indicate that future drilling is likely within and adjacent to the WSA.

All of the Oregon Buttes WSA is included within two coal designations. This area was included within a coal lands withdrawal by Executive Order (November 15, 1910) and within a Minerals Management Service coal classification order. Although no coal beds outcrop within the WSA, it is underlain by a coal-bearing sequence approximately 1,200 feet thick. The coal-bearing sequence has an aggregate thickness of as much as 100 feet of coal and contains several coal beds more than 15 feet thick. The economic cutoff point for subsurface mining as determined by the Minerals Management Service is 3,000 feet. The coal present in the WSA is near this depth or deeper. The Oregon Buttes WSA has low potential for economic development of the coal resource.

Some oil shale occurs in the Wilkins Peak and Laney Shale members of the Green River Forma-



-  Wilderness Study Area Boundary
-  Oregon Buttes Cultural ACEC
-  Pre-FLPMA Leases
-  Post-FLPMA Leases
-  Not Presently Leased
-  Abandoned Well



Map OB-2
Oregon Buttes WSA
OIL AND GAS LEASES

OREGON BUTTES

tion in the WSA, but the beds are thin and low grade. The oil shale resource has low development potential in the Oregon Buttes WSA.

North of the WSA on the southeast edge of the Prospect Mountains, uranium mineralization occurs in sandstone and conglomerate that are probably in the Wasatch Formation. In the WSA the formations of major interest appear to be Tertiary in age. A large portion of the WSA has been claim staked for uranium, however, no development has occurred and none is foreseen in the immediate future.

Sediment deposits of Quaternary age sand and gravel outcrop in the vicinity of Oregon Buttes. At present, there is no nearby development and subsequently no demand for these resources. The resource has low development potential. These deposits could be used as a gravel source if oil and gas development increases significantly in the vicinity of these deposits. The resource would then have a higher development potential.

Paleontological Resources

Marine fossils and other paleontological resources were noted in this WSA during the wilderness inventory process. McGrew and Bown (1976) confirm the potential for further finds.

SOILS

Most of the soils in the Oregon Buttes WSA are classified as shallow soils (steep mountain slopes), with a few pockets of other soil types found on the eastern, southern, and western fringes. Five broad soil types occur in the WSA. They include: (1) shallow soils (steep mountain slopes); (2) shallow residual upland soils; (3) sandy saline (alluvial fans); (4) shallow soils (residual uplands); and (5) steep shallow soils. See Appendix F for detailed descriptions of these soil types.

WATER RESOURCES

The WSA has no perennial streams. There are a few intermittent streams which comprise the bulk of the water in the area. The source of this water is primarily annual runoff during spring and early summer as a result of snowmelt and some seeps.

There are seven reservoirs found within the WSA, all of which contain water and show signs of usage. The condition of the reservoirs, which were developed for livestock, varies from complete disrepair to functional and operative.

There are several springs located on the eastern boundary of the WSA (Oregon Buttes and Honeycomb Buttes boundary). These springs provide water most of the year for two livestock reservoirs and a tributary of Bear Creek. The quality of the spring water is adequate for human consumption at its source.

VEGETATION

The area within the WSA was included in a range survey conducted in 1976. Vegetation types were mapped and transects run to determine vegetation production. Data from this source were used to describe the vegetation.

Big sagebrush communities dominate the area. Understory species vary, depending on the particular site. The most common species associated with big sagebrush are thickspike wheatgrass, various bluegrass species, bluebunch wheatgrass, june grass, and bottlebrush squirreltail. A wide variety of forb species also occur in association with the sagebrush.

Near the bases of the buttes and on more level topography, are areas where saltbush is the dominant community. Vegetation species found in this community are somewhat salt tolerant and include Nuttall saltbush, birdsfoot sagebrush, bottlebrush squirreltail, Indian ricegrass, and a variety of annual forbs. These areas intergrade into areas dominated by birdsfoot sagebrush, with little or no saltbush. Thickspike wheatgrass occurs in both the saltbush and birdsfoot sagebrush communities, but in varying amounts.

Several small stands of limber pine occur on the tops and slopes of the buttes themselves. These stands have virtually no understory. Other areas have scattered pine with a sagebrush-grass understory.

Aspen stands occur on the bases of the buttes, particularly the west side. The understory is primarily made up of grass and sedge species. The sagebrush-grass type is mixed into the more open aspens.

OREGON BUTTES



Secondary butte seen through Oregon Buttes limber pine.

The vegetation of the WSA is best suited for grazing and wildlife habitat. The WSA is moderately productive in the high moisture pockets and on the northern slopes of the buttes.

WILDLIFE

The Oregon Buttes WSA provides excellent wildlife habitat. Only those major species which commonly occur in the WSA will be discussed here. A complete list of animals found in this WSA is available for review in the Big Sandy Resource Area Office.

Big game habitat in the WSA is extremely important. Pronghorn antelope use the WSA during the summer. Mule deer use the WSA during the summer and linger until the late fall, when bad weather may force them to migrate south. The area is an important elk calving ground and is one of the few remaining calving areas used by the Sands elk herd. These elk use the area summer long, and remain in the western portion of the WSA during the winter (see Map OB-3).

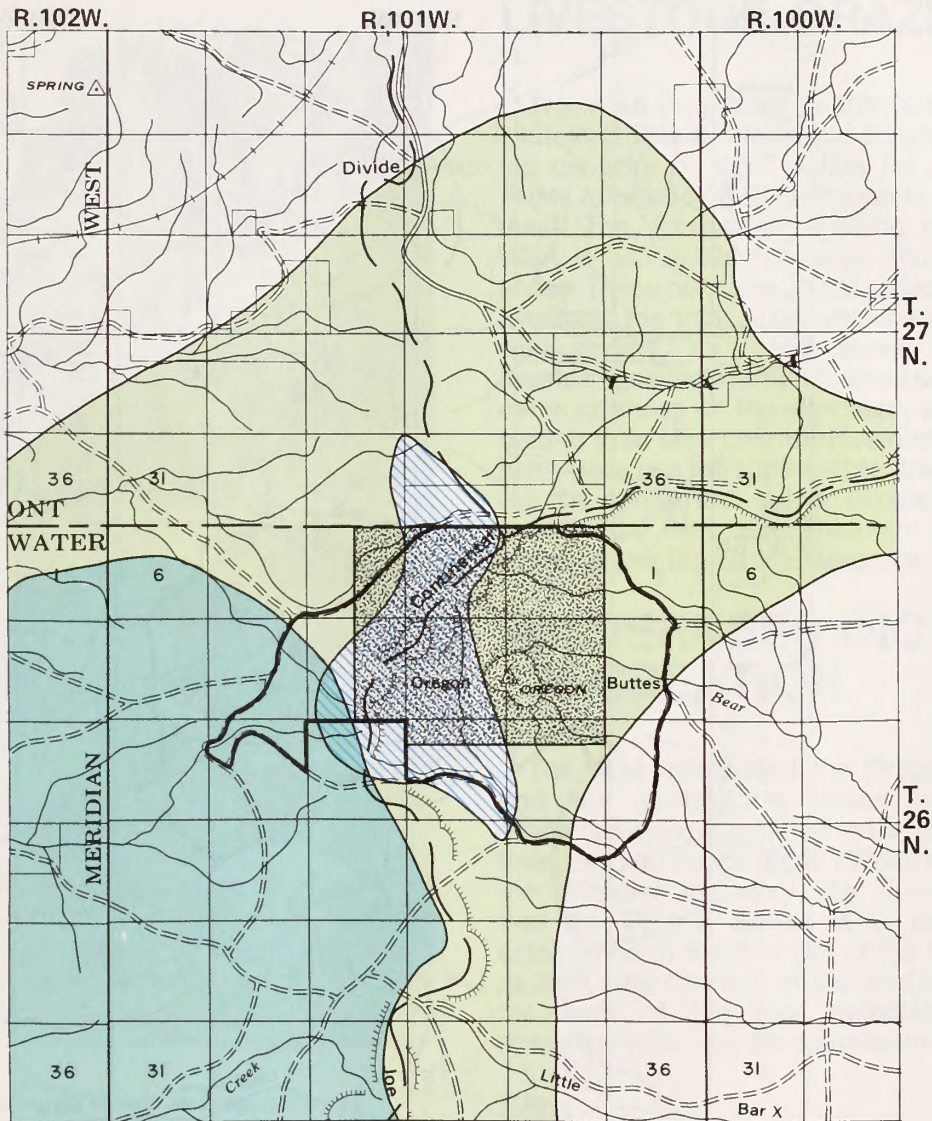
Raptor habitat in the WSA is excellent, due to the availability of suitable nesting sites (see Map OB-4). Intensive inventories have revealed six prairie falcon aeries, and one red-tailed hawk nest. Evidence of great horned owls has been found in

the area, although nest locations have not been identified. Historically, peregrine falcons (an endangered species) nested on the buttes, but they have not done so since 1965.

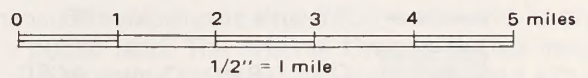
Two large predator species have been identified as using the Oregon Buttes WSA, mountain lions and coyotes. Mountain lions and bobcats use the entire WSA, however, they are not considered to be common, due to generally low populations. Coyotes are common throughout the WSA.

WILD HORSES

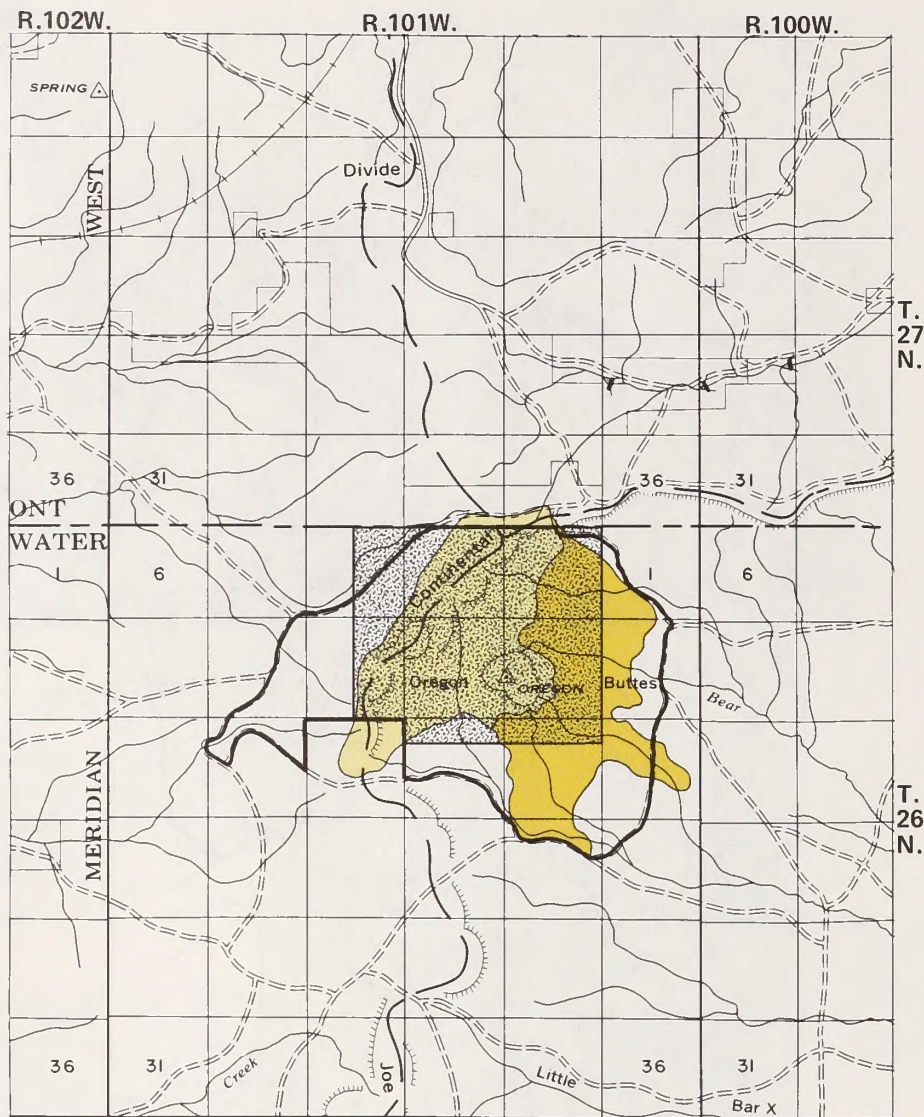
The WSA is within the Divide Basin Wild Horse Herd Management Area (WHHMA) (see District-wide Analysis, Chapter 2, Map D-8). An inventory in February 1982 indicated that there are 2,307 horses in the WHHMA. The management objective for the WHHMA is to reduce the numbers to 500 by fall of 1984. Visitors to the WSA can expect to see herds in the area, especially in the summer. During the winter many of the horses move to the southern portion of the WHHMA, south of the WSA boundaries.

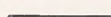

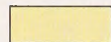
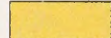


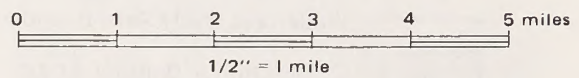
-  Wilderness Study Area Boundary
-  Oregon Buttes Cultural ACEC
-  Elk Summer Range
-  Elk Winter Range
-  Elk Calving Area



Map OB-3
Oregon Buttes WSA
SAND ELK HERD HABITAT



-  Wilderness Study Area Boundary
-  Oregon Buttes Cultural ACEC
-  Active Raptor Habitat
-  Uninventoried Raptor Habitat



OREGON BUTTES



Elk calve in these aspen stands on Oregon Buttes.



Oregon Buttes raptor habitat.

LIVESTOCK GRAZING

The WSA is located in the Bush Rim grazing allotment. This allotment has an approximate grazing capacity of 4,947 AUMs for cattle or 6,733 AUMs for sheep on all public lands within the allotment. The approximate grazing capacity in the WSA is 383 AUMs for cattle and 380 AUMs for sheep. These numbers do not reflect actual use for livestock; the total AUMs include use for wildlife, wild horses, etc., and areas unsuitable for livestock grazing. Currently, three permittees graze cattle or sheep on the allotment, with the use occurring from May 12 until November 30. Four other permittees use the allotment for trailing sheep during the spring and fall. A detailed management plan for the Bush Rim Allotment is available for review in the Big Sandy Resource Area Office.

WILDERNESS INCLUDING RECREATION

The BLM inventoried the Oregon Buttes area and all contiguous lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory, the Bureau determined that the Oregon Buttes WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Size

This WSA contains 5,700 acres and is entirely public land. The original Oregon Buttes inventory unit totaled 7,578 acres, which included 422 acres of state land. Due to public comments, a road running through sections 12, 13, 23, and 24 was identified, and BLM subsequently dropped 1,456 acres from the southeastern portion of the inventory unit. During the intensive inventory all state land (422 acres) was considered extraneous to the unit and was dropped.

Naturalness

The Oregon Buttes WSA appears to be in an essentially natural condition. Closer inspection reveals two seismograph trails and 13 two-track trails, which cumulatively reduce the naturalness

OREGON BUTTES

of this WSA. However, these intrusions all fade into obscurity; some to end as haphazard tire tracks across the hills and dry claylike soil; others ending abruptly at the top of a bench or saddle ridge; and others are overgrown with sagebrush and grass.

Outstanding Opportunities (Recreation)

Opportunities for solitude in the WSA are good, even though it is relatively small (5,700 acres); however, much of this is due to the undeveloped nature of the surrounding countryside. Outstanding opportunities can be found in the tiny pocket forests scattered around the buttes.

Opportunities for primitive and unconfined recreation are outstanding in the WSA. Being prime raptor habitat, the buttes provide bird watchers with a variety of species and uninterrupted observation. The WSA is also a prime area for scenic and wildlife photography, offering a unique variety of settings and subjects. Other recreation opportunities include hiking, rock climbing, backpacking, hunting, horseback riding, and sightseeing. Finally, the WSA offers a wide variety of materials of interest to rockhounds.

Supplemental Values

A great number of supplemental values are found in this WSA. Petrified wood is abundant, varying in size from chips to stumps. Oregon Buttes are historically significant as well. The buttes were a major landmark for travelers of the Oregon Trail, which is located less than seven miles to the north of the WSA. A unique feature of the Oregon Buttes WSA is that the buttes are presently used as a calving area by the only herd of desert elk in Wyoming.

CULTURAL RESOURCES

The Oregon Buttes WSA has not undergone a cultural resource inventory. However, remains of old Indian tipi rings can be found in the shadow of one of the main buttes. What significance the buttes had to the Indian tribes which used this area is unknown. Any activities that might have occurred in the area cannot be addressed, due to lack of data.

The historical significance of Oregon Buttes has been well documented. Oregon Buttes were an im-



Oregon Buttes: Landmark for Oregon Trail pioneers.

OREGON BUTTES

portant landmark for fur trappers, missionaries, pioneers, Oregon settlers, Mormons, and California gold seekers traveling the Oregon Trail, which is located less than seven miles to the north (see District-wide analysis, Chapter 2, Map D-11). Journals of some early travelers speak of the psychological and spiritual lift inspired by Oregon Buttes. The buttes could be seen from great distances and marked the approximate eastern boundary of the Oregon Territory and the division between the Atlantic and Pacific watersheds. To the nearly 300,000 emigrants who passed this way between 1843–1863, the buttes became the turning point of their expedition.

Oregon Buttes Cultural ACEC

An Area of Critical Environmental Concern has been identified to protect the cultural and other values of Oregon Buttes. The ACEC contains approximately 3,520 acres. This area has high historical value, due to its proximity to the Oregon Trail. It is highly scenic and provides valuable wildlife habitat. ACEC management would include: (1) protection of the butte tops from disturbance; (2) protection of key raptor habitat; (3) protection of the scattered forest stands, as they are important elk calving areas; (4) limiting vehicle use to existing roads, with the possible closure of some two-track trails if their use interfered with the ACEC objectives; and (5) offering guidance to the public on appropriate camping locations.

VISUAL RESOURCES

The Oregon Buttes are a remarkable landmark. They dominate the surrounding countryside with their grandeur and diversity. Visibility from the butte tops is outstanding, offering miles of scenic vistas including the Wind River Mountains on the north to the Uinta Mountain Range to the southwest. This WSA is classified as VRM Class II. The basic management guideline for this VRM class is described in detail in the District-wide Analysis, Chapter 2, Visual Resources.

NOISE

Existing noise levels within the WSA are low with occasional increases from two sources: oil and gas activities and U.S. Air Force Strategic Air Command's low-level training flights for B-52 bombers. The latter occurs infrequently and the chances of being in the WSA during an overflight are slight. The oil and gas activities do not presently cause much disturbance in the WSA, except for an occasional truck passing nearby and during geophysical exploration activities, particularly where explosives are used.

LAND USE CONSTRAINTS

The lands surrounding the Oregon Buttes WSA are predominantly public lands administered by BLM. There is some private land adjacent to the WSA on the north, and a section of state land is adjacent to the WSA on the south.

The WSA is located within Sweetwater County and is zoned as an agricultural district. As an agricultural district, there are numerous uses which may be permitted in the area. Some of these uses are: mineral exploration and drilling; oil and gas exploration and development; railway rights-of-way; and transmission lines, stations, and towers. More detailed information on zoning districts is available in the Zoning Resolution of Sweetwater County, Wyoming, and in the District-wide Analysis, Chapter 2, Land Use Constraints.

SOCIOECONOMIC CONDITIONS

This WSA is located in Sweetwater County. The current socioeconomic conditions of Sweetwater County are addressed in the District-wide Analysis, Chapter 2, Socioeconomic Conditions.

CHAPTER 2

Introduction

The purpose of this chapter is to provide a general overview of the field of landscape architecture. It is intended for students who are new to the field and for those who are looking for a refresher course. The chapter covers the history of the profession, the scope of practice, and the various disciplines that contribute to the field. It also discusses the role of the landscape architect in the planning and design process.

LAND USE CONSTRAINTS

Land use constraints are factors that limit the way land can be used. These constraints can be natural, such as topography, climate, and soil, or they can be human-made, such as zoning laws, existing infrastructure, and cultural heritage. Understanding these constraints is essential for the landscape architect to develop effective and sustainable designs.

The landscape architect must consider the impact of these constraints on the design process. For example, a steep slope may limit the types of vegetation that can be planted, or a wetland may restrict the location of a building. By understanding these constraints, the landscape architect can develop designs that are both aesthetically pleasing and functionally sound.

Visual Resources

Visual resources are the elements of the landscape that contribute to its visual quality. These resources include natural features such as mountains, rivers, and forests, as well as human-made features such as buildings, bridges, and parks. The landscape architect must understand the visual resources of a site in order to develop designs that enhance and preserve them.

The landscape architect must also consider the impact of visual resources on the design process. For example, a view of a mountain range may be a key element of a site's visual quality, and the landscape architect must ensure that the design does not obstruct this view. By understanding the visual resources of a site, the landscape architect can develop designs that are both aesthetically pleasing and functionally sound.

Design Process

The design process is the series of steps that the landscape architect follows to develop a design. It typically begins with a site analysis, which involves understanding the site's constraints and resources. This is followed by a conceptual design phase, where the landscape architect develops a preliminary design. The final phase is the detailed design, where the landscape architect develops a final design that can be used for construction.

Visual Resources

The landscape architect must understand the visual resources of a site in order to develop designs that enhance and preserve them. This involves a thorough site analysis, which includes identifying the site's natural and human-made features. The landscape architect must also understand the impact of these resources on the design process, and develop designs that are both aesthetically pleasing and functionally sound.

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CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumptions and guidelines were used for impact analysis:

1. The BLM mineral report addressing the mineral potential of this WSA assigns a moderate to high potential rating for oil and gas development. This rating, coupled with the large amount of pre-FLPMA leases (approximately 75 percent), makes moderate to high development of the WSA a reasonable expectation under nonwilderness management, and projects only slightly less development under wilderness management. The management prescriptions for the Oregon Buttes Cultural ACEC would constrain development on the buttes under nonwilderness management, but extensive activities surrounding the buttes are anticipated.
2. Although coal does occur within the Oregon Buttes WSA, it is considered to have low development potential, and it is assumed that the coal resource would never be developed under either alternative.
3. Due to their low development potential, it is assumed that locatable minerals (uranium and gold) would never be developed in the Oregon Buttes WSA under either alternative.
4. Although the WSA lies within an area of oil shale occurrence, development of this resource would probably not occur, due to its low development potential.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action minor adverse impacts would occur to air quality. It is expected that there would be an increase in the total suspended particulates (TSP) and other pollutants within the Oregon Buttes WSA. This increase would be caused by increased oil and gas development within and adjacent to the WSA, as well as increased trona mining and processing activities west of Green River.

Topography

Under the proposed action no impacts would occur to topography. The topography of the buttes is a key feature to be protected under the Oregon Buttes Cultural ACEC Management Plan.

Paleontological Resources

Under the proposed action adverse impacts could occur to the paleontological resources in Oregon Buttes. In the areas where oil and gas activities occur, the impacts could be highly adverse. On the protected buttes area, the adverse impacts would be negligible.

Soils

Under the proposed action moderately adverse impacts would occur to soils. Soil erosion would

OREGON BUTTES

increase in the Oregon Buttes WSA. Those activities which accelerate soil erosion (oil and gas development) would be permitted. Site-specific mitigation requirements which serve to reduce potential erosion problems, would be applied to all development activities. However, some erosion (beyond the current natural erosion) is inevitable.

Water Resources

Under the proposed action no impacts would occur to the water resources within the Oregon Buttes WSA. Site-specific mitigation requirements would be applied to surface disturbing activities to avoid any possible impacts to small intermittent streams and seeps.

Vegetation

Under the proposed action minor adverse impacts would occur to vegetation. Disturbance to vegetation would increase, as oil and gas exploration and development activities occur. Site-specific mitigation requirements would be applied to all development activities to reduce potential vegetation loss. However, some loss of vegetation is inevitable.

The Oregon Buttes WSA has several small stands of aspen and limber pine, which provide valuable wildlife habitat. These stands are within the Oregon Buttes Cultural ACEC and management prescriptions would be developed to protect these stands.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Wildlife

Under the proposed action minor adverse impacts would occur to wildlife. It is expected that wildlife populations in the Oregon Buttes WSA would decrease slightly from current levels. Although the Oregon Buttes Cultural ACEC was designated in part to protect wildlife habitat, it is doubtful that the ACEC management prescriptions would be able to afford wildlife full protection from disturbing activities in this active oil and gas area.

It is expected that elk would be affected more than the other big game species. The elk population is expected to decrease from current levels, due to an increase in disturbing activities. Because this area is heavily used for calving, disturbing activities could have serious effects on the entire Sands elk herd. An increase in disturbing activities may cause a slight decrease in the amount of deer occupying the WSA. However, herd unit populations (which occupy an area much larger than the WSA) should not be affected.

It is anticipated that raptor productivity would decrease, due to increased disturbance. However, ACEC management prescriptions would be developed to protect nesting sites. These prescriptions may include requiring buffer zones around nest sites or seasonal restrictions on disturbance.

The proposed action would have no impact on the large predator species, because these species have low populations and very large ranges.

Wild Horses

Under the proposed action no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the Oregon Buttes WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Anticipated oil and gas activities would not adversely affect the horses.

Livestock Grazing

Livestock grazing and management would not be affected by the proposed action. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease of forage available to livestock.

The number of range improvements in the Oregon Buttes WSA could increase if necessary. However, no new improvements are likely. Existing improvements could be maintained by conventional means. ACEC road closures are not expected to have an adverse effect on livestock management.

OREGON BUTTES

Wilderness Including Recreation

Wilderness Values

Under the proposed action moderately adverse impacts would occur to wilderness values. Wilderness values of the WSA would be lost, at least until oil and gas development operations were completed. The ACEC management prescriptions will not protect many wilderness values of the area. The ACEC is small and disrupting sights and sounds carry very easily into the elevated lands surrounding the buttes. Therefore, the opportunities for solitude and primitive recreation would be limited.

Recreation Opportunities

Under the proposed action minor adverse impacts would occur to recreation opportunities. Although some two-track trail closures are planned to protect the values of the Oregon Buttes Cultural ACEC, vehicle accessibility in the WSA would probably increase in the future, due to new oil and gas access roads. This factor would increase the number of hunter-days spent in the WSA, over the short term.

However, due to an increase in general disturbance resulting from anticipated oil and gas activities, and a subsequent decrease in big game populations (see wildlife), hunting quality, over the long term, would decline. Once hunters learn of this decrease in quality, it is anticipated that in the long term, the number of hunter-days would be less than at the present time. This decrease in big game populations would also cause a similar decrease in visitor use for photography and wildlife observation.

The number of hiking visitor-days would not change from present levels, because the ACEC encompassing the buttes would continue to be desirable for hiking. It is expected that rockhounding activities would remain at current levels as well.

Cultural Resources

Under the proposed action no impacts would occur to cultural resources. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation

Act of 1966 (36 Code of Federal Regulations, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under the proposed action minor adverse impacts would occur to visual resources. One of the major objectives for the MFP decision to designate Oregon Buttes as an ACEC, was to protect important scenic values. Therefore, it is probable that the Oregon Buttes WSA would retain its current visual resource management classification (Class II), although increasing oil and gas development would adversely impact some of the visual values of the area.

Noise

The noise level in the WSA would increase in proportion to increased oil and gas activities within and adjacent to the WSA, resulting in a moderately adverse impact. U.S. Air Force low-level bomber training flights would continue sporadically over the WSA.

Land Use Constraints

The proposed action would not conflict with county zoning nor would it conflict with the management of adjoining state lands. Rights-of-way would be allowed within the ACEC, but not on the buttes. Structures would not be allowed within the ACEC, because they would detract from the historic landmark features. (In some instances, valid existing rights may make these restrictions impossible to implement.)

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives is a composite of the general trend in resource use for all the WSAs.

The level of livestock grazing in the WSA is not expected to change as a result of the proposed ac-

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tion. Therefore, receipts from livestock production are not expected to be impacted from the proposed action.

Under the proposed action there would be a minor decrease in the number of visitor-days expected in the WSA, due to a decrease in hunter use and sightseeing, however, the adverse effect on the recreation industry would be negligible. The proposed action would allow development of oil and gas resources throughout the WSA. Increased exploration and development would be expected to increase employment, income, revenues, and taxes of the region.

IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Under wilderness management minor adverse impacts would occur to air quality. Wilderness designation would assist in maintaining existing air quality and other natural resource values. However, because of constraints on BLM wilderness management (see District-wide Analysis, Chapter 1, BLM Wilderness Management Policies), some adverse impacts would occur. If the Oregon Buttes WSA is designated wilderness, there would be no change in the air quality class (currently class II). However, there may be a slight increase in the total suspended particulates (TSP) and other pollutants within the WSA. This increase, which would not be significant enough to cause a change in air quality class, would be primarily due to increased oil and gas activities on pre-FLPMA leases and adjacent lands, and increased trona mining activities west of Green River.

Topography

No impacts to topography are anticipated under wilderness management.

Paleontological Resources

Under wilderness management adverse impacts would occur to the paleontological resources in

Oregon Buttes WSA. In the areas where oil and gas activities occur, the impacts would be highly adverse. On the protected buttes area, the adverse impacts would be negligible.

Soils

Under wilderness management moderately adverse impacts would occur to soils. If Oregon Buttes WSA is designated wilderness, those activities which accelerate soil erosion would be restricted, however the assumed moderate oil and gas development on pre-FLPMA leases would be allowed to continue, with at least nondegradation requirements applied. Some erosion, beyond the current natural erosion, is inevitable.

Water Resources

Under wilderness management no impacts would occur to the water resources of the WSA. Any possible impacts to small intermittent streams and seeps would be mitigated by applying at least nondegradation requirements.

Vegetation

Under wilderness management minor adverse impacts would occur to vegetation. If the Oregon Buttes WSA is designated wilderness, those activities which accelerate vegetation loss (oil and gas activities), would be restricted more than at present. The potential for loss of vegetation would be less than the proposed action but more than at present, due to assumed oil and gas activities on pre-FLPMA leases.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Wildlife

Under wilderness management minor adverse impacts would occur to wildlife. It would normally be expected that wilderness management would benefit wildlife, and population increases would be anticipated. However, in the Oregon Buttes WSA, wilderness management would not benefit wildlife to a significant extent. Wilderness management

OREGON BUTTES

would result in a lesser amount of disturbing activities on post-FLPMA leases and unleased areas, however, anticipated oil and gas activities on pre-FLPMA leases would be unaffected.

It is expected that elk would be affected more than other big game species. The elk population is expected to decrease from current levels, due to an increase in disturbing activities. Because this area is heavily used for calving, disturbing activities could have serious effects on the entire Sands elk herd. An increase in disturbing activities may cause a slight decrease in the amount of deer occupying the WSA. However, herd unit populations (which occupy an area much larger than the WSA) are not expected to change.

It is anticipated that raptor productivity would decrease, due to increased disturbance. However, ACEC management prescriptions, would be developed to protect nesting sites. These prescriptions may include requiring buffer zones around nest sites or seasonal restrictions on disturbance.

Wilderness management of the WSA would have no impact on the large predator species, because these species have low populations and very large ranges.

Wild Horses

Under wilderness management no impacts would occur to wild horses. There would be no change in the management of the wild horse herds. Management objectives for the Oregon Buttes WSA would remain consistent with the Divide Basin Wild Horse Herd Management Plan. Anticipated oil and gas activities would not adversely affect the horses. In accordance with the special exceptions allowed under the wilderness management policy, special permission would be required to allow low-level helicopter use for periodic roundups.

Livestock Grazing

Livestock grazing would not be affected by wilderness management. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease of forage available to livestock.

If the WSA is designated as wilderness, it is anticipated that the number of range improvements that could be implemented would decrease slightly. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock. Existing and future improvements could be maintained with motor vehicles or motorized equipment only if no other alternatives exist. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determined that other alternatives (such as horseback) do not exist and wilderness values would not be impaired. This motor vehicle restriction could cause some loss of efficiency in livestock management.

Wilderness Including Recreation

Wilderness Values

Under wilderness management minor adverse impacts would occur to wilderness values. These adverse impacts are a result of allowed oil and gas activities on pre-FLPMA leases. If development occurs on 25 to 50 percent of the lands within the WSA, wilderness values could be lost, at least until oil and gas development is completed. Those wilderness values retained would be more a result of the amount of oil and gas discovered, than of the type of management afforded the area.

Recreation Opportunities

Under wilderness management minor adverse impacts would occur to recreation opportunities, due to allowed oil and gas activities. Designation of as a wilderness area would impact various recreation activities in different ways. In the short term, wilderness management would decrease the amount of hunter-days spent in the WSA. Hunters in the high desert have traditionally used motor vehicles. Wilderness management would exclude most motor vehicle use, and this type of hunting would not occur.

Because of continued oil and gas disturbance on pre-FLPMA leases and an anticipated decrease in big game populations (see Wildlife), hunting quality would decline over the long term. Once hunters learn of this decrease in quality, it is anticipated that in the long term, hunter-days would be less than before the area was designated

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wilderness. The decrease in big game populations could also cause a decrease in visitor use for photography and wildlife observation.

It is probable that the number of hikers would increase in the short term. Wilderness designation may initially draw a few more people to the area due to the increased publicity associated with wilderness designation. However, this would probably level off in the long term due to the problems that people will encounter in hiking through the high desert, such as scarce water supplies, few shelter areas, etc. However, hiker use is expected to remain at higher levels than at present.

It is expected that rockhounding activities would decrease from current levels. Without a way to carry out the rocks, except on their backs, rockhounders would seek other areas.

Cultural Resources

Under wilderness management no impacts would occur to cultural resources. Allowed oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under wilderness management minor adverse impacts would occur to visual resources. If the WSA was designated wilderness, BLM would upgrade the visual classification to Class I and would manage it as such. However, allowed oil and gas development on pre-FLPMA leases would adversely impact some of the visual values of the area. In the very long term, after the intrusions are removed and reclamation is complete, the original visual qualities may return.

Noise

The noise level in the WSA would increase as the amount of oil and gas exploration and development increases within and adjacent to the WSA, resulting in minor adverse impacts. Negotiations would be initiated with the U.S. Air Force to alter the route of their low-level bomber training flights.

Land Use Constraints

Wilderness management would not conflict with county zoning, but it may conflict with the management of adjoining state lands. Rights-of-way, structures, etc., would not be allowed within the WSA unless associated with development of pre-FLPMA leases.

Socioeconomic Conditions

The level of livestock grazing in the WSA is not expected to change as a result of wilderness management. Therefore, receipts from livestock production are not expected to be affected by wilderness management.

Under wilderness management there would be a minor decrease in the number of visitor-days expected in the WSA, due to a decrease in hunter use, sightseeing, and rockhounding. However, a significant impact is not expected on recreation expenditures in the region.

Under wilderness management oil and gas activities on pre-FLPMA leases would be expected to result in increased employment, income, revenues, and taxes. Wilderness management would allow development of mineral resources on over 75 percent of the WSA, with at least nondegradation requirements applied.

SUMMARY OF IMPACTS

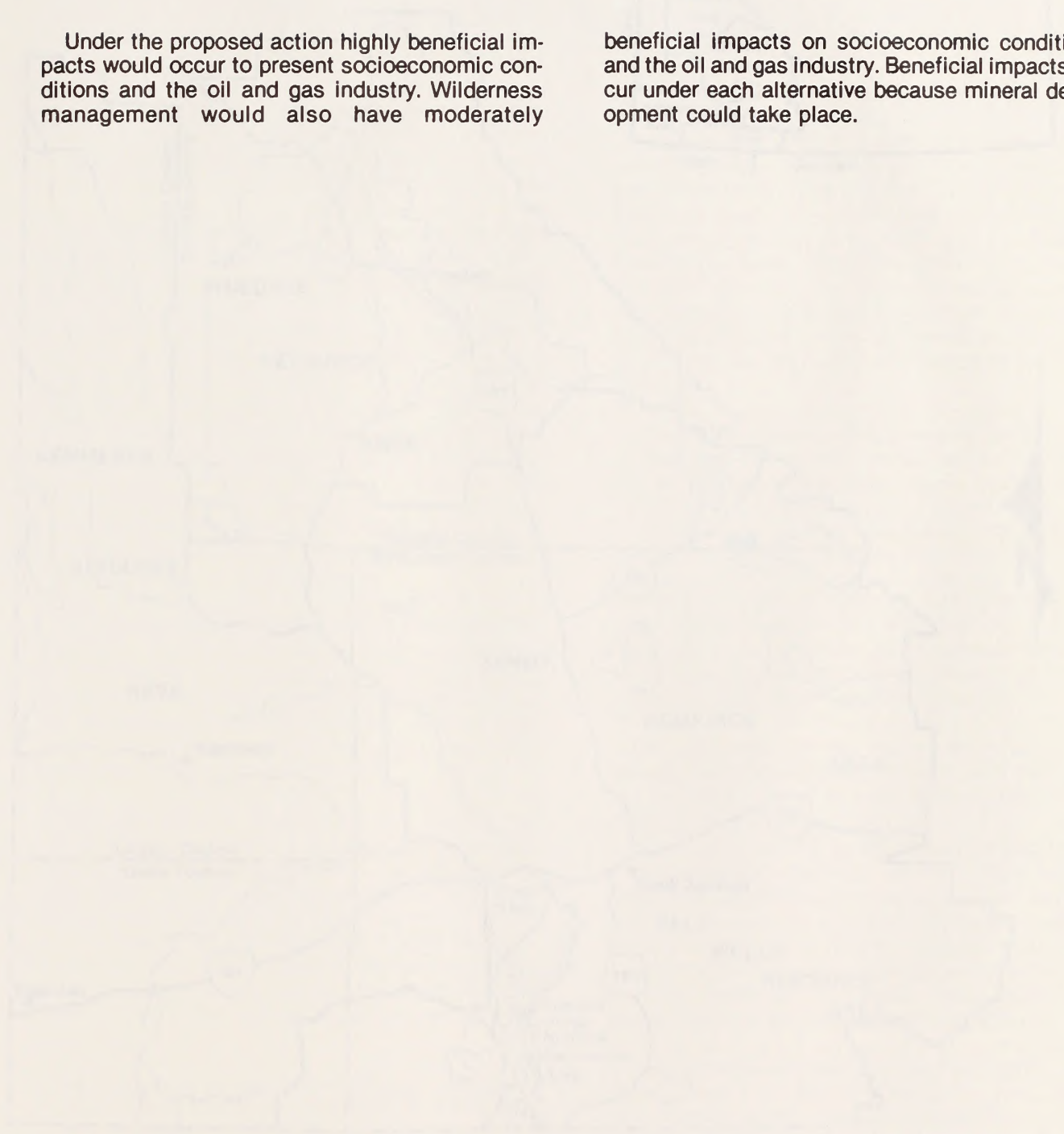
Site-specific impacts for the Oregon Buttes WSA are summarized as follows: Implementation of the proposed action or wilderness management would result in minor adverse impacts to the present natural resource base. The adverse impacts occurring under the proposed action and the wilderness alternative are a result of increased oil and gas activities, which are anticipated to occur. The similarity in impacts occurs because of the high percentage of pre-FLPMA leases and the moderate to high development potential of oil and gas within the WSA.

Impacts to wilderness values would be moderately adverse under the proposed action, and minor adverse impacts are expected under the wilderness alternative. Under the proposed action and wilderness management, minor adverse impacts would occur to recreation opportunities.

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Under the proposed action highly beneficial impacts would occur to present socioeconomic conditions and the oil and gas industry. Wilderness management would also have moderately

beneficial impacts on socioeconomic conditions and the oil and gas industry. Beneficial impacts occur under each alternative because mineral development could take place.



Wilderness Management Plan for the
Oregon Buttes, Oregon
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240

REPORT

1. The purpose of this report is to provide a detailed account of the activities and findings of the research project conducted during the period from January 1, 1968, to December 31, 1968.

2. The project was carried out under the supervision of the Principal Investigator, Dr. J. H. Smith, and the assistance of the following personnel: Mr. A. B. Jones, Mr. C. D. Brown, and Mr. E. F. Green.

3. The project was supported by the National Science Foundation, Grant No. 1234567, and the Department of Energy, Grant No. 8765432.

4. The project was conducted at the University of California, Los Angeles, and the following facilities were used: the Physics Department, the Chemistry Department, and the Engineering Department.

5. The project was completed on December 31, 1968, and the following results were obtained: a detailed description of the physical properties of the material, a determination of the chemical composition, and a measurement of the rate of reaction.

6. The results of the project are presented in the following sections: Introduction, Experimental Methods, Results, and Conclusions.

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CONCLUSIONS

12. The project was completed on December 31, 1968, and the following results were obtained: a detailed description of the physical properties of the material, a determination of the chemical composition, and a measurement of the rate of reaction.

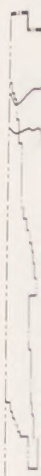
13. The results of the project are presented in the following sections: Introduction, Experimental Methods, Results, and Conclusions.

14. The project was completed on December 31, 1968, and the following results were obtained: a detailed description of the physical properties of the material, a determination of the chemical composition, and a measurement of the rate of reaction.

REFERENCES

15. The project was completed on December 31, 1968, and the following results were obtained: a detailed description of the physical properties of the material, a determination of the chemical composition, and a measurement of the rate of reaction.

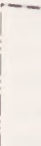
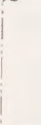
16. The results of the project are presented in the following sections: Introduction, Experimental Methods, Results, and Conclusions.



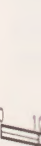
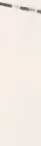
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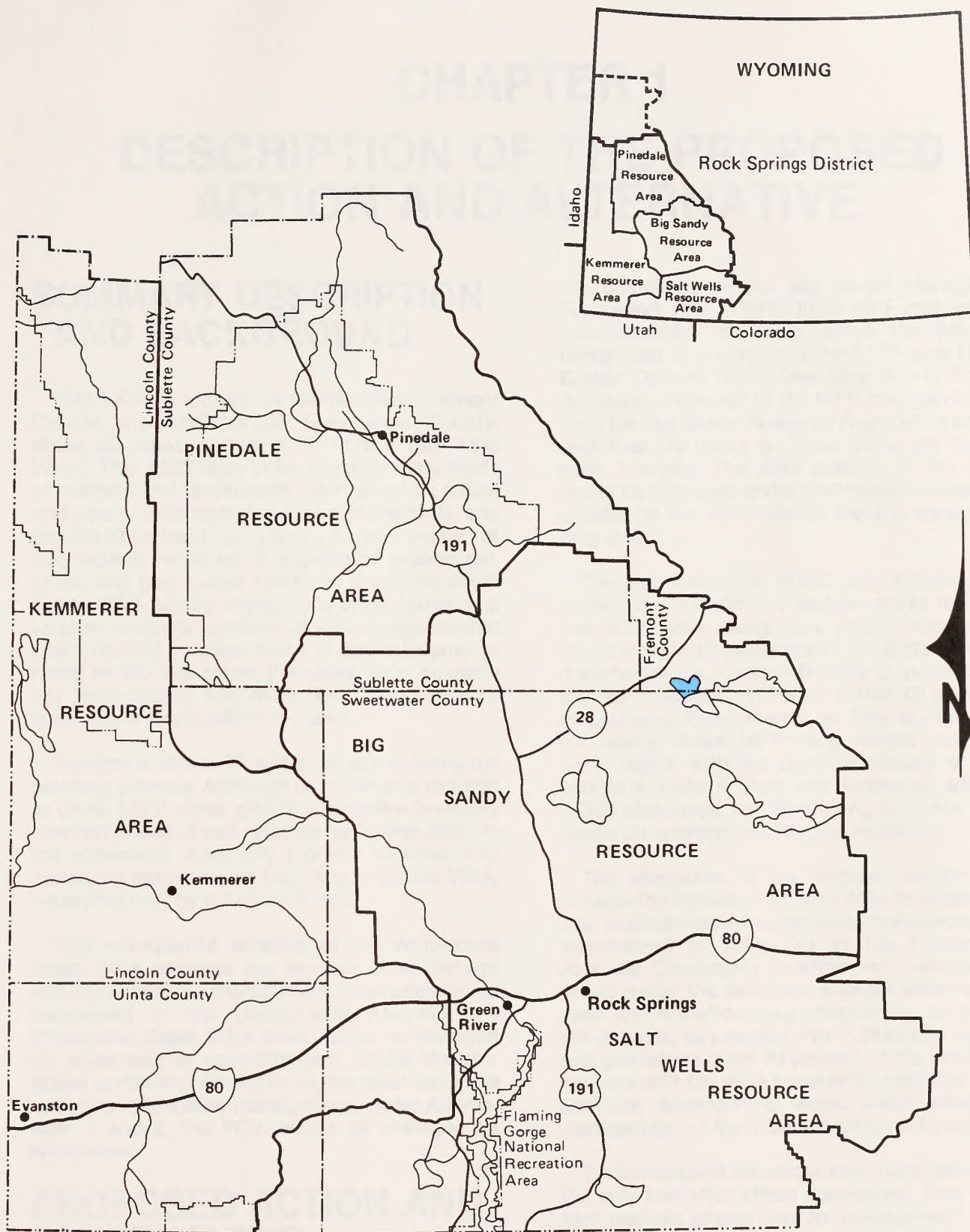


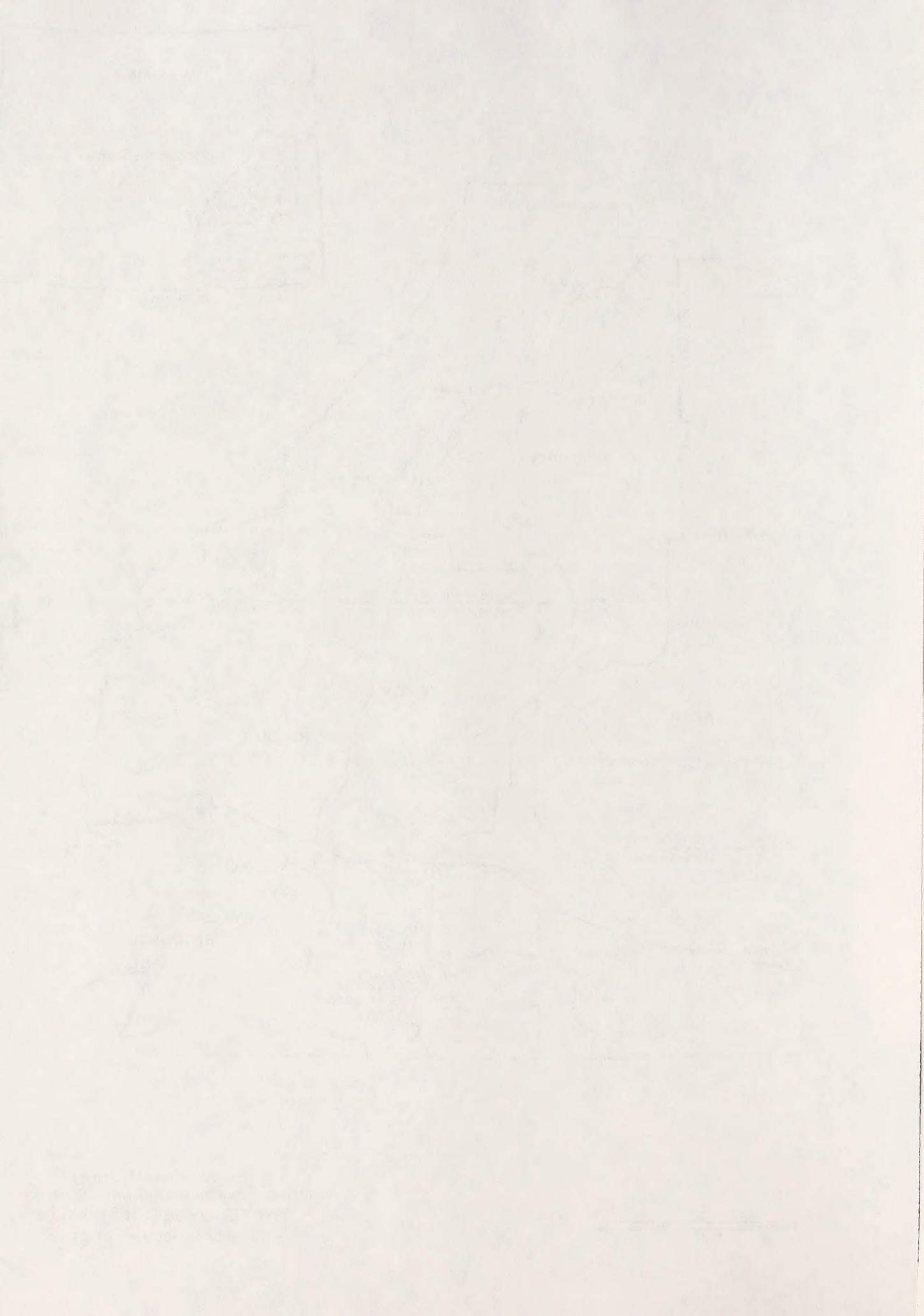
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CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

This WSA is located in southeastern Fremont County and north-central Sweetwater County, about 30 miles northeast of Farson (see Map WH-1). This 4,028-acre WSA contains a multitude of habitats and landscapes, such as small aspen and pine groves; high, sheer sandstone cliffs; and an area of badland topography. A major portion of this WSA is made up of a group of eroding red, green, and gray buttes similar to the Honeycomb Buttes WSA nearby. Topography in the central and western sections consists of a flat, sage-covered basin, rimmed by sheer mud and clay escarpments rising to 100 feet above the valley floor. Valuable big game habitat (elk, mule deer, and pronghorn antelope) is found within the area.

The size of this WSA was a key issue during the planning process. Although the WSA was reduced to under 5,000 acres after the intensive inventory was completed, it was retained for further study in the wilderness suitability process because it is merely an extension of the Oregon Buttes WSA, separated only by a two-track trail.

This site-specific analysis of the Whitehorse Creek WSA analyzes the impacts of wilderness and nonwilderness management. In all alternatives considered in the District-wide Analysis, the Whitehorse Creek WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternative 3, the WSA would be under nonwilderness management; under Alternatives 1 and 2, the WSA would be managed as wilderness.

PROPOSED ACTION AND ALTERNATIVE

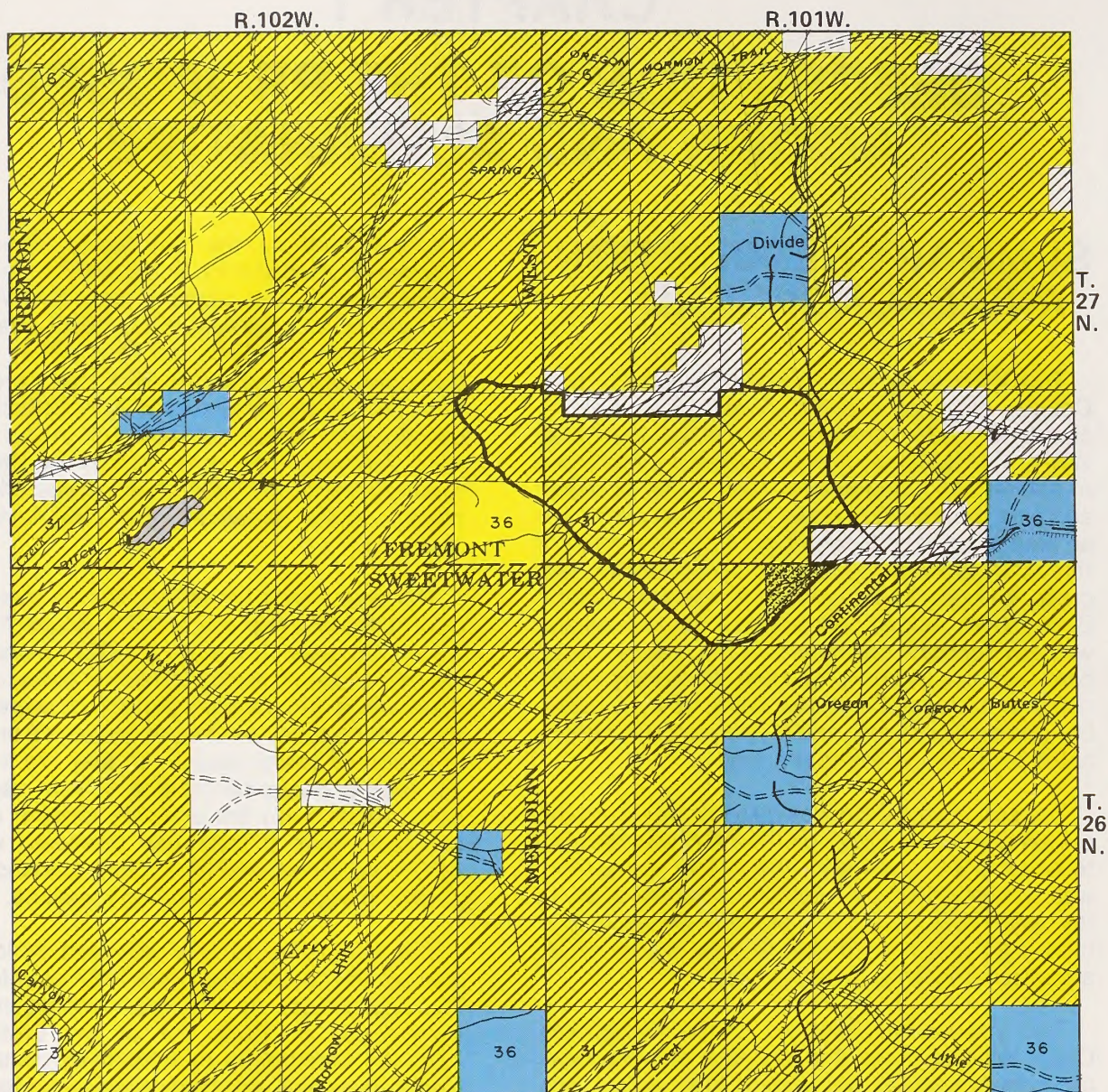
The proposed action is to recommend to the President, via the Secretary of the Interior, that this WSA not be designated wilderness. Under the proposed action the WSA would be managed under

the guidelines of the Big Sandy Management Framework Plan (MFP). Under MFP management approximately 160 acres within the WSA are designated as a portion of the 3,520-acre Oregon Buttes Cultural ACEC (see Map WH-1). Specific decisions contained in the MFP may be obtained from the Big Sandy Resource Area Office and key decisions are listed on Table D-3 in the District-wide Analysis. The area outside of the ACEC would be managed under multiple-use criteria applicable to the remainder of the Big Sandy Planning Unit.

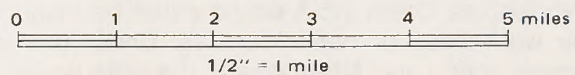
The area inside the ACEC will be managed to protect the historic and wildlife values for which the ACEC was designated. ACEC management would include: (1) protection of the butte tops from disturbance (i.e., Oregon Buttes); (2) protection of key raptor habitat on Oregon Buttes; (3) protection of scattered forest stands, as they are important elk calving areas; (4) limiting vehicle use to existing roads, with the possible closure of some two-track trails if their use interfered with the ACEC objectives; and (5) offering guidance to the public on appropriate camping locations.

The alternative to the proposed action is to manage the Whitehorse Creek WSA as wilderness. The implications of wilderness management are summarized in Table D-1 of the District-wide Analysis. Constraints to wilderness management would make the activities allowed under wilderness and nonwilderness alternatives, as well as the impacts, very similar. Pre-FLPMA and state oil and gas leases cover 98 percent of the WSA. This coupled with the WSA's moderate potential for oil and gas development, would make wilderness management of the WSA extremely difficult.

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values in the Whitehorse Creek WSA. Other alternatives were not considered realistic or as responsible resource management under the Federal Land Policy and Management Act of 1976.



- Wilderness Study Area Boundary
- Oregon Buttes Cultural ACEC
- Public Land (Administered by BLM)
- Private Land
- State Land
- Federal Minerals



Map WH-1
Whitehorse Creek WSA
LAND AND MINERAL STATUS

CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Whitehorse Creek WSA is characteristic of the semiarid cold desert. Average daytime temperatures for the area range from 65° F. in July to 5° F. in January, with a growing season of approximately 160 days for grasses.

The area receives approximately 10 to 12 inches of precipitation annually, with less than half in the form of snow. The prevailing winds are generally from the west. Wind speeds normally average 15 mph, but gusts may reach as high as 82 mph preceding strong frontal passages. The highest wind speeds normally occur in late winter and spring.

AIR QUALITY

Within the Whitehorse Creek WSA air pollution levels are low. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) do not exceed allowable standards (Science Applications, Inc. 1980). Particulate matter, spawned by the combination of wind and an arid countryside, results in some degree of "natural" pollution.

TOPOGRAPHY

The WSA contains a multitude of habitats and landscapes such as small aspen and pine groves; high, sheer, sandstone cliffs; and an area of striking badland topography. A major portion of this WSA is made up of a group of eroding red, green, and gray buttes. Topography in the central and western sections consists of a flat, sage-covered basin, rimmed by sheer mud and clay escarpments rising to 100 feet above the valley floor. Elevations in the WSA range from 7,100 to 7,900 feet.

GEOLOGY

The WSA lies on a structural platform which joins the Rock Springs Uplift to the Wind River Range and is included in the Green River Basin. The rocks exposed in the Whitehorse Creek WSA consist of lacustrine and fluvial deposits (Green River, Wasatch, and Bridger formations) which

total about 2,000 feet in thickness and range in age from early Eocene to Pliocene. Unexposed rocks include about 25,000 feet of sedimentary rocks which range in age from Paleocene to Cambrian overlying the crystalline Precambrian basement.

Mineral Resources

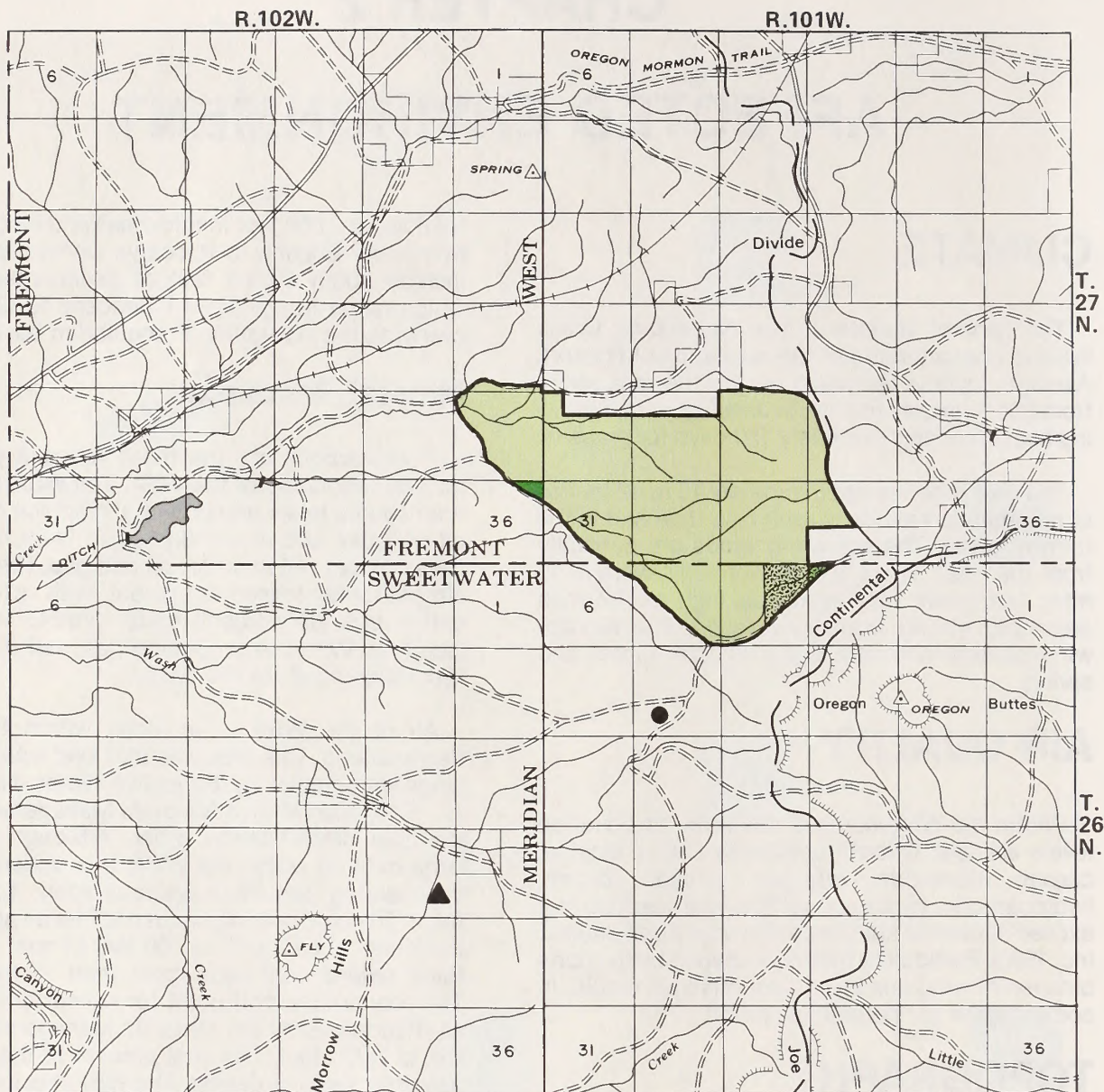
Hydrocarbons are the most valuable potential mineral resources of the WSA. The WSA contains both source rocks and potential reservoir rocks for oil and gas and is considered to have moderate development potential for oil and gas. The WSA is almost totally leased at present, with virtually the entire area (95 percent) under pre-FLPMA lease (see Map WH-2). A producing gas well is located four miles south of the WSA.

All of the WSA is included within two coal designations. This area was included within a coal lands withdrawal by Executive Order (November 15, 1910) and within a Minerals Management Service coal classification order. Although no coal beds outcrop within the WSA, it is underlain by a coal-bearing sequence approximately 1,200 feet thick. The coal-bearing sequence has an aggregate thickness of as much as 100 feet of coal and contains several coal beds more than 15 feet thick. The economic cutoff point for subsurface mining, as determined by the Minerals Management Service, is 3,000 feet. The coal present in the WSA is near this depth or deeper. The WSA has low potential for economic development of the coal resource.

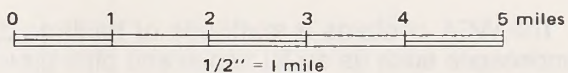
There are oil shale beds in the Wilkins Peak Member of the Green River Formation in the WSA, but these beds are thin and low grade. The oil shale resource has a low development potential in the WSA.

North of the WSA on the southeast edge of the Prospect Mountains, uranium mineralization occurs in sandstone and conglomerate that are probably in the Wasatch Formation. A large portion of the WSA has been staked for uranium and most of these claims are pre-FLPMA. However, at present there is no development of the uranium in the WSA. The WSA has a low development potential for economic deposits of uranium.

Several placer gold claims occur in the WSA. The claims appear to have been staked on conglomerate deposits occurring in the Wasatch For-



- Wilderness Study Area Boundary
- Oregon Buttes Cultural ACEC
- Pre-FLPMA Leases
- Post-FLPMA Leases
- State Minerals
- Producing Well (Davis Oil Buccaneer No.1)
- Abandoned Well



Map WH-2
Whitehorse Creek WSA
OIL AND GAS LEASES

WHITEHORSE CREEK

mation. A field check of these claims in August of 1981 did not show any recent activity and no gold production has been reported from these claims. Gold has a low development potential for the WSA.

Paleontological Resources

Marine fossils and other paleontological resources were noted in this WSA during the intensive wilderness inventory. McGrew and Bown (1976) confirm the potential for further finds in this area.

SOILS

Five broad soil types occur in the Whitehorse Creek WSA. They include: (1) alkaline-saline; (2) shallow soils (steep mountain slopes); (3) steep shallow soils (canyons and ravines); (4) shallow residual upland; and (5) shallow to deep soils (residual uplands). See Appendix F for detailed descriptions of these soil types.

WATER RESOURCES

The WSA has no perennial streams located within its boundaries. There are numerous intermittent streams which comprise the bulk of the water in the area. The source of this water is primarily annual runoff during spring and early summer as a result of snowmelt.

There are three reservoirs found within the WSA boundaries, all of which contain water and show signs of usage. The condition of the reservoirs, which were developed for livestock, varies from complete disrepair to functional and operative.

VEGETATION

The area within the WSA was included in a range survey conducted in 1976. Vegetation types were mapped and transects run to determine vegetation production. Data from this source were used to describe the vegetation.

The big sagebrush type dominates the area. Understory species vary, depending on the particular site. The most common species associated with big sagebrush are thickspike wheatgrass, various bluegrass species, bluebunch wheatgrass, june grass, and bottlebrush squirreltail. A wide

variety of forb species also occur in association with the sagebrush.

Small areas of saline tolerant vegetation occur in association with the badland areas. Common species on these sites include Nuttall saltbush, birdsfoot sagebrush, Indian ricegrass, bottlebrush squirreltail, and several annual and perennial forbs.

Rock outcrop areas have scattered limber pine growing on them. Vegetation associated with the limber pine is similar to that found in the big sagebrush type described earlier.

A few scattered stands of aspen occur in moist areas, primarily on the lee side of hills where blowing snow accumulates. Understory species would be similar to the sagebrush type with lesser amounts of sagebrush and more grasses.

The badland areas are almost devoid of vegetation. Small areas of saline tolerant vegetation occur. In drainages or areas where moisture accumulates, sagebrush with very little or no understory may be found.

WILDLIFE

The WSA provides good wildlife habitat. In this section, only those major species which commonly occur in the WSA, will be discussed. A complete list of species found in this WSA is available for review in the Big Sandy Resource Area Office.

Valuable big game habitat is found within the area. Pronghorn antelope use the WSA during the summer. Mule deer use the WSA during the summer and linger until the late fall, when bad weather may force them to migrate south. Elk use the WSA during the summer, and remain in the southwestern portion of the WSA during the winter. Elk also use a very small area in the southeast portion of the WSA for calving, one of the few suitable calving areas that the Sands elk herd has left.

Good raptor habitat is present in the WSA. Spot inventories have been conducted and numerous raptor nests were noted.

Three large predator species have been identified as using the Whitehorse Creek WSA, including mountain lions, red foxes, and coyotes. Mountain lion habitat is generally limited to the southeastern sections of the WSA. Bobcats use the entire WSA; however, both bobcats and moun-

WHITEHORSE CREEK



Whitehorse Creek badlands.

tain lions are not considered to be common. Red foxes occur in the northwestern tip of the WSA, and coyotes are common throughout the WSA.

WILD HORSES

There are no wild horse herds in this WSA, although an occasional stray may drift into the WSA. Horses in the vicinity of the WSA would be managed as part of the Divide Basin Wild Horse Herd Management Area.

LIVESTOCK GRAZING

The WSA is located in both the Pacific Creek and Bush Rim grazing allotments. Detailed allotment management plans for these areas are available for review in the Big Sandy Resource Area Office. These numbers do not reflect actual use for livestock; the total AUMs include use by wildlife, wild horses, etc., or areas unsuitable for livestock grazing.

The Pacific Creek Allotment has an approximate grazing capacity of 10,430 AUMs for cattle or 13,512 AUMs for sheep on all public lands within the allotment. Currently, one permittee grazes cattle on the allotments from May 1 until December 15 each year. Eight other permittees use the allotment for trailing both cattle and sheep during the spring and fall.

The Bush Rim Allotment has an approximate grazing capacity of 4,947 AUMs for cattle or 6,733 AUMs for sheep on all public lands within the allotment. Currently, three permittees graze cattle or sheep on the allotment with the use occurring from May 12 until November 30. Four other permittees use the allotment for trailing sheep during the spring and fall.

Within the WSA, the approximate grazing capacity for cattle is 311 AUMs or 366 AUMs for sheep.

WILDERNESS INCLUDING RECREATION

The BLM inventoried the Whitehorse Creek area and all contiguous public lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory the Bureau determined that the Whitehorse Creek WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

WHITEHORSE CREEK

Size

This WSA contains 4,028 acres and is entirely public land. The original inventory unit totaled 6,690 acres of public land. Several two-track trails and old seismic lines in the eastern portion of the inventory unit were deemed sufficiently noticeable to make that portion unnatural. One of these two-track trails which runs along the Continental Divide, was used as the eastern boundary. Two two-track trails in the northern part of the inventory unit isolated another small parcel. The remaining acreage of 4,028 acres was too small to meet the 5,000-acre minimum, but due to public comment and because this inventory unit is only separated from the Oregon Buttes WSA by a two-track trail, the inventory unit was retained as a Wilderness Study Area and was evaluated in conjunction with the Oregon Buttes WSA.

Naturalness

The majority of the WSA is in an almost pristine natural condition. A few obscure two-track trails enter the WSA for a few hundred yards in several locations.

Outstanding Opportunities (Recreation)

Opportunities for solitude are particularly high in areas west of the Continental Divide, north of Oregon Buttes, and south of Pastel Butte. From on top of the largest butte in the area, which rises 650 feet above the basin floor and 7,915 feet above sea level, a keen sense of isolation and solitude is felt as one looks down into the maze-like setting created by the eroded escarpments lining the Whitehorse Creek Basin.

Particularly outstanding opportunities for primitive and unconfined recreation include rock climbing and studying the unique badland topography of Whitehorse Creek. Other excellent recreational opportunities of the WSA include nature and wildlife photography, bird watching, and big game hunting.

Supplemental Values

There is a wide variety of wildlife species in the WSA. The badlands are laced with petrified wood, agate beds, and fossils of snails and clams, which provide outstanding rockhounding values.

CULTURAL RESOURCES

Several old Indian chippings (lithic scatters) have been found within the WSA, offering evidence that ancient Native Americans once roamed in this area. At least one large prehistoric campsite has also been identified within the WSA. However, until further information is available, these activities cannot be addressed in detail.

VISUAL RESOURCES

The WSA contains a multitude of habitats and landscapes. This WSA lies within two VRM Classes. The major portion of the WSA is classified as Class IV, and a small portion of the WSA on the northwest lies within Class III. The basic management guidelines for these visual resource management classes are described in detail in the District-wide Analysis, Chapter 2, Visual Resources.

NOISE

Existing noise levels within the WSA are low with occasional increases from two sources: oil and gas activities and U.S. Air Force Strategic Air Command's low-level training flights for B-52 bombers. The latter occurs infrequently and the chances of being in the WSA during an overflight are slight. The oil and gas activities do not presently cause much disturbance in the WSA, except for an occasional truck passing nearby and during geophysical exploration activities, particularly where explosives are used.

LAND USE CONSTRAINTS

The lands surrounding the WSA are predominantly public lands administered by BLM. There is a section of state land adjacent to the WSA on the north. There are also some private lands located on the north boundary of the WSA.

The northern portion of the WSA is within Fremont County. The county has elected not to adopt the traditional zoning approach. Instead, improvement standards have been developed which identify the limits of the effect of such land developments as waste water disposal, traffic generation, solid waste disposal, etc. Generalized land use

WHITEHORSE CREEK

districts are established which recognize the capability and suitability of the land.

The southern portion of the WSA is located within Sweetwater County and is zoned as an agricultural district. As an agricultural district there are numerous uses which may be allowed in the area. Some of these uses are: mineral exploration and drilling; oil and gas exploration and development; railway rights-of-way; and transmission lines, stations, and towers. More detailed information on zoning districts is available in the Zoning Resolution of Sweetwater County, Wyo-

ming, and in the District-wide Analysis, Chapter 2, Land Use Constraints.

SOCIOECONOMIC CONDITIONS

This WSA is located in Sweetwater and Fremont counties. The socioeconomic conditions of these counties are presented in the District-wide Analysis, Chapter 2, Socioeconomic Conditions.



View from Whitehorse Creek WSA to the east.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumptions were used for impact analysis:

1. The oil and gas potential of this WSA is moderate, and approximately 98 percent of the WSA is either pre-FLPMA (95 percent) or state leased (3 percent). It is assumed that extensive exploration and moderate development will take place within the WSA.
2. Although coal does occur within the Whitehorse Creek WSA, it is considered to have low development potential; it is assumed that the coal resource would never be mined under either alternative.
3. Because of their low development potentials, it is assumed that locatable minerals (uranium and gold) would never be mined in the Whitehorse Creek WSA under either alternative.
4. Although the WSA lies within an area of oil shale occurrence, development of this resource would probably not occur, due to its low development potential.
5. One-hundred-sixty acres of the Oregon Buttes Cultural ACEC falls within the Whitehorse Creek WSA. This area is so small that it is assumed that it would not affect either wilderness or nonwilderness management of the WSA.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action moderately adverse impacts would occur to air quality. It is expected that there would be an increase in the total suspended particulates (TSP) and other pollutants

within the WSA. This increase would be caused by increased oil and gas activities within and adjacent to the WSA, as well as increased trona mining activities west of Green River. Air quality in the area could decrease to the point that reclassification by the State of Wyoming is called for, however, this situation is not expected.

Topography

Under the proposed action minor adverse impacts would occur to topography. It is expected that the topography of the WSA would change slightly, due to anticipated oil and gas activities.

Paleontological Resources

Under the proposed action moderately adverse impacts would occur to paleontological resources due to the anticipated oil and gas activities.

Soils

Under the proposed action minor adverse impacts would occur to soils. Soil erosion would increase in the WSA as those activities which accelerate soil erosion (primarily oil and gas development) occur. Site-specific mitigation requirements, which serve to reduce potential erosion problems, would be applied to all development activities. However, some erosion (beyond the current natural erosion) is inevitable. This erosion is usually long term, lasting until reclamation is completed.

Water Resources

Under the proposed action there would be no impact to the limited water resources found within the WSA. Any possible impacts to the water resources, from surface-disturbing activities, would be reduced by applying site-specific mitigation requirements.

Vegetation

Under the proposed action moderately adverse impacts would occur to vegetation. Disturbance to vegetation would increase as oil and gas exploration and development activities occur. Site-specific mitigation requirements, which serve to reduce potential vegetation loss, will be applied to all development activities. However, some loss of vegetation is inevitable.

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In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Small, scattered stands of limber pine occur within the WSA. Because their occurrence is unique in the high desert, these stands would be afforded full protection under the proposed action. Protection of these stands would have little effect on development activities.

Disturbance to vegetation caused by off-road vehicle use would probably not increase from the present situation. Vehicle use would be restricted to existing roads and trails, thereby limiting the amount of disturbance to vegetation.

Wildlife

Under the proposed action moderately adverse impacts would occur to wildlife. It is anticipated that wildlife populations in the WSA would decrease slightly from current levels, with elk being affected more than the other big game species. This decrease would be caused by an increase in disturbing activities, primarily oil and gas exploration and development. Because the far eastern portion of this WSA is used for elk calving, disturbing activities could affect population levels for the whole Sands elk herd (the herd unit occupies an area much larger than the WSA).

A general increase in disturbing activities may cause a slight decrease in the amount of deer occupying the WSA. However, herd unit populations (which occupy an area much larger than the WSA) should not be affected. Because pronghorn antelope are more tolerant to disturbance, populations within the WSA are not expected to change under nonwilderness management.

It is anticipated that raptor productivity would decrease in the future, due to increased levels of disturbance. However, raptor nesting sites would be afforded some protection during the nesting season.

Implementation of the proposed action would have no impact on the large predator species. This is because these species have low populations and very large ranges.

Livestock Grazing

Livestock grazing and management would not be affected by the proposed action. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease of forage available to livestock.

The number of range improvements in the WSA could increase if necessary; however, no new improvements are likely. Existing improvements could be maintained by conventional means.

Wilderness Including Recreation

Wilderness Values

Under the proposed action highly adverse impacts would occur to the wilderness values in the WSA. The wilderness values would be lost, at least until oil and gas development operations were complete. The naturalness of the WSA, as well as opportunities for solitude and primitive recreation, would be virtually nonexistent.

Recreation Opportunities

Under the proposed action moderately adverse impacts would occur to recreation opportunities. Overall vehicle accessibility in the WSA would probably increase in the future, due to construction of access roads for oil and gas activities. This factor would increase the number of hunter-days spent in the WSA over the short term. However, due to an increase in general disturbance and a subsequent decrease in big game populations, hunting quality would decline over the long term. Once hunters learn of this decrease in quality, it is anticipated that in the long term, the number of hunter-days would be less than at the present time. This decrease in big game populations could also cause a decrease in visitor use for photography and wildlife observation. Motor vehicle use would be limited to existing roads and trails.

Cultural Resources

Under the proposed action no impacts would occur to cultural resources. Anticipated oil and gas activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act

WHITEHORSE CREEK

of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under the proposed action highly adverse impacts would occur to visual resources. Due to the amount of oil and gas activities that are expected in the WSA, the visual resources of the WSA would decline, and BLM would downgrade the VRM classifications. Any oil and gas development in this WSA would be highly visible.

Noise

The noise level in the WSA would increase as the amount of oil and gas exploration and development increases, resulting in a highly adverse impact. U.S. Air Force low-level bomber training flights would continue sporadically over the WSA.

Land Use Constraints

The proposed action would not conflict with county zoning, nor would it conflict with the management of adjoining state lands.

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives is a composite of the general trend in resource use for all the WSAs.

Under the proposed action no change in proprietor's income would accrue to the livestock industry. There would be a moderate decrease in the number of visitor-days expected in the WSA, due to a decrease in hunter use and sightseeing. However, expenditures for recreational use of the WSA are not expected to change.

The proposed action would allow oil and gas exploration and development throughout the WSA. Oil and gas industry activity is expected to increase employment, income, revenues, and taxes as a result of exploration and/or development.

IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Under wilderness management moderately adverse impacts would occur to air quality. Wilderness designation would assist in maintaining existing air quality and other natural resource values. However, because of constraints on BLM wilderness management (see District-wide Analysis, Chapter 1, BLM Wilderness Management Policies), some adverse impacts would occur. If the Whitehorse Creek WSA is designated wilderness, there would be no change in the air quality class (currently Class II). There would be an increase in the total suspended particulates (TSP) and other pollutants within the WSA, due to allowed oil and gas exploration and development activities on pre-FLPMA and state leases.

Topography

Under wilderness management minor adverse impacts would occur to topography. It is expected that the topography of the WSA would change slightly, due to allowed oil and gas activities on pre-FLPMA and state leases.

Paleontological Resources

Impacts to paleontological resources in the WSA would be moderately adverse, due to the allowed oil and gas activities on pre-FLPMA and state leases.

Soils

Under wilderness management minor adverse impacts would occur to soils. Those activities which accelerate soil erosion would be restricted, but the assumed moderate oil and gas development on pre-FLPMA leases, would be allowed to continue with at least nondegradation requirements applied.

Water Resources

Under wilderness management there would be no impact to the limited water resources found

WHITEHORSE CREEK

within the WSA. Any possible impacts to the water resources, from surface-disturbing activities, would be mitigated by applying at least nondegradation requirements. Most developments on pre-FLPMA leases could be required to avoid seeps and reservoirs, as development in such areas would constitute "undue environmental degradation".

Vegetation

Under wilderness management moderately adverse impacts would occur to vegetation. Disturbance to vegetation would increase as anticipated oil and gas exploration and development on pre-FLPMA leases expands within the WSA. At a minimum, nondegradation requirements, which serve to reduce potential vegetation loss, would be applied to all development activities. However, some loss of vegetation is inevitable.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species, both native and non-native, such as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Wildlife

Under wilderness management moderately adverse impacts would occur to wildlife, due to allowed oil and gas activities on pre-FLPMA and state leases. It is anticipated that big game populations in the WSA would decrease slightly from current levels, with elk being affected more than mule deer or pronghorn antelope. Raptor productivity would also decrease. In the very long term (50 years or more), after completion of oil and gas development and successful rehabilitation, wildlife would benefit from wilderness designation. A slight improvement in wildlife habitat may occur, but it would be many years before the habitat is returned to its present condition.

Livestock Grazing

Livestock grazing would not be affected by wilderness management. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease of forage available to livestock.

If the Whitehorse Creek WSA is designated wilderness, it is anticipated that the number of range improvements that could be implemented would decrease slightly. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock. Existing and future improvements could be maintained with motor vehicles or motorized equipment, only if no other alternatives exist. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determined that other alternatives (such as horseback) do not exist and wilderness values would not be impaired. This motor vehicle restriction could cause some loss of efficiency in livestock management.

Wilderness Including Recreation

Wilderness Values

Under wilderness management highly adverse impacts would occur to wilderness values, due to allowed oil and gas activities on pre-FLPMA and state leases. If development occurs on half of the land within the WSA, wilderness values would be lost for the long term. Those wilderness values retained would be more a result of the amount of oil and gas discovered, than the type of management implemented.

Recreation Opportunities

Under wilderness management moderately adverse impacts would occur to recreation opportunities. In the short term, wilderness designation would decrease the number of hunter-days spent in the WSA. Hunters in the high desert have traditionally used motor vehicles. Wilderness management would exclude most motor vehicle use, and this type of hunting would not occur.

Due to disturbance associated with allowed oil and gas activities on pre-FLPMA and state leases, and a subsequent decrease in big game populations, hunting quality would decline. Once hunters learn of this decrease in quality, it is anticipated that in the long term, hunter-days would decrease. The decrease in big game populations could also cause a decrease in visitor use for photography and wildlife observation.

The desirability of the WSA for hiking would

WHITEHORSE CREEK

decline, due to the anticipated increase in oil and gas activities on pre-FLPMA and state leases. It is also expected that rockhounding activities would decrease from current levels. Without a means of carrying the rocks out, except on their backs, rockhounters would seek other areas.

Cultural Resources

Under wilderness management no impacts would occur to cultural resources. Allowed oil and gas activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under wilderness management highly adverse impacts would occur to visual resources. The WSA was identified as having visual resource management classes III and IV. If this WSA is designated as wilderness, BLM would upgrade the VRM classifications to Class I and would manage it as such. However, due to allowed oil and gas activities on pre-FLPMA and state leases, the beneficial impacts to be expected under wilderness management are eliminated. Any oil and gas development in this WSA would be highly visible.

Noise

The noise level in the WSA would increase as the amount of oil and gas exploration and development on pre-FLPMA and state leases increases, resulting in a highly adverse impact. Negotiations would be initiated with the U.S. Air Force to alter the route of their low-level bomber training flights.

Land Use Constraints

Wilderness management would not conflict

with county zoning, but it could conflict with the management of adjoining state lands. Rights-of-way, structures, etc., would not be allowed within the WSA unless associated with pre-FLPMA or state lease development.

Socioeconomic Conditions

Under wilderness management no change in proprietor's income would accrue to the livestock industry. There would be a moderate decrease in the number of visitor-days expected in the WSA, due to a decrease in hunter use and sightseeing. However, expenditures for recreational use of the WSA are not expected to change.

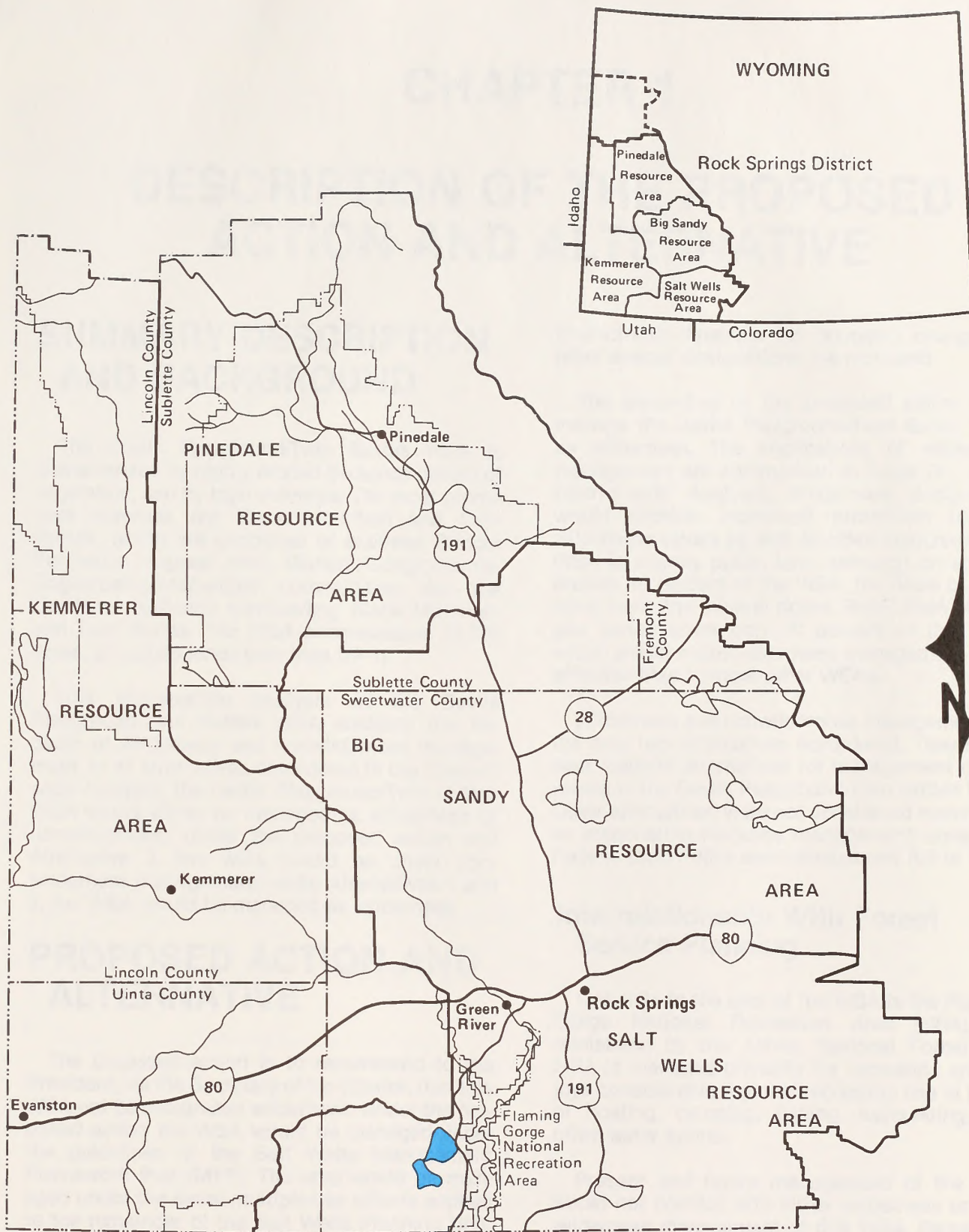
Under wilderness management oil and gas exploration and development would be allowed on 98 percent of the WSA. Oil and gas industry activity is expected to increase employment, income, revenues, and taxes as a result of exploration and/or development.

SUMMARY OF IMPACTS

Site-specific impacts for the Whitehorse Creek WSA are summarized as follows: Implementation of the proposed action or wilderness management would result in moderately adverse impacts to the present natural resource base. The adverse impacts occurring under the proposed action and the wilderness alternative are a result of increased oil and gas activities which are anticipated to occur.

Wilderness values would be severely impacted under both the proposed action and wilderness management. The anticipated oil and gas activities would have highly adverse impacts on the wilderness values. Recreation opportunities would incur moderately adverse impacts under both the proposed action and the wilderness alternative, due to anticipated oil and gas activities.

Under the proposed action and wilderness management, moderately beneficial impacts would occur to present socioeconomic conditions and the oil and gas industry.



CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

The Devils Playground-Twin Buttes WSA is characterized by highly eroded badlands devoid of vegetation, and by high outcrops. The most prominent outcrops are Black Mountain and Twin Buttes, which are examples of exposed Bridger Formation capped with Bishop Conglomerate. Sagebrush-grass/juniper communities dot the dominant badlands surrounding Black Mountain and Twin Buttes. The WSA encompasses 24,276 acres, all public lands (see Map DP-1).

This site-specific analysis of the Devils Playground-Twin Buttes WSA analyzes the impacts of wilderness and nonwilderness management. In all alternatives considered in the District-wide Analysis, the Devils Playground-Twin Buttes WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternative 3, the WSA would be under non-wilderness management; under Alternatives 1 and 2, the WSA would be managed as wilderness.

PROPOSED ACTION AND ALTERNATIVE

The proposed action is to recommend to the President, via the Secretary of the Interior, that this WSA not be designated wilderness. Under the proposed action the WSA would be managed under the guidelines of the Salt Wells Management Framework Plan (MFP). The area would be managed under the same multiple-use criteria applied to the remainder of the Salt Wells Planning Unit. Specific decisions contained in the MFP may be obtained from the Salt Wells Resource Area Office and key decisions are listed on Table D-3 in the

District-wide Analysis. No boundary changes or other special designations are proposed.

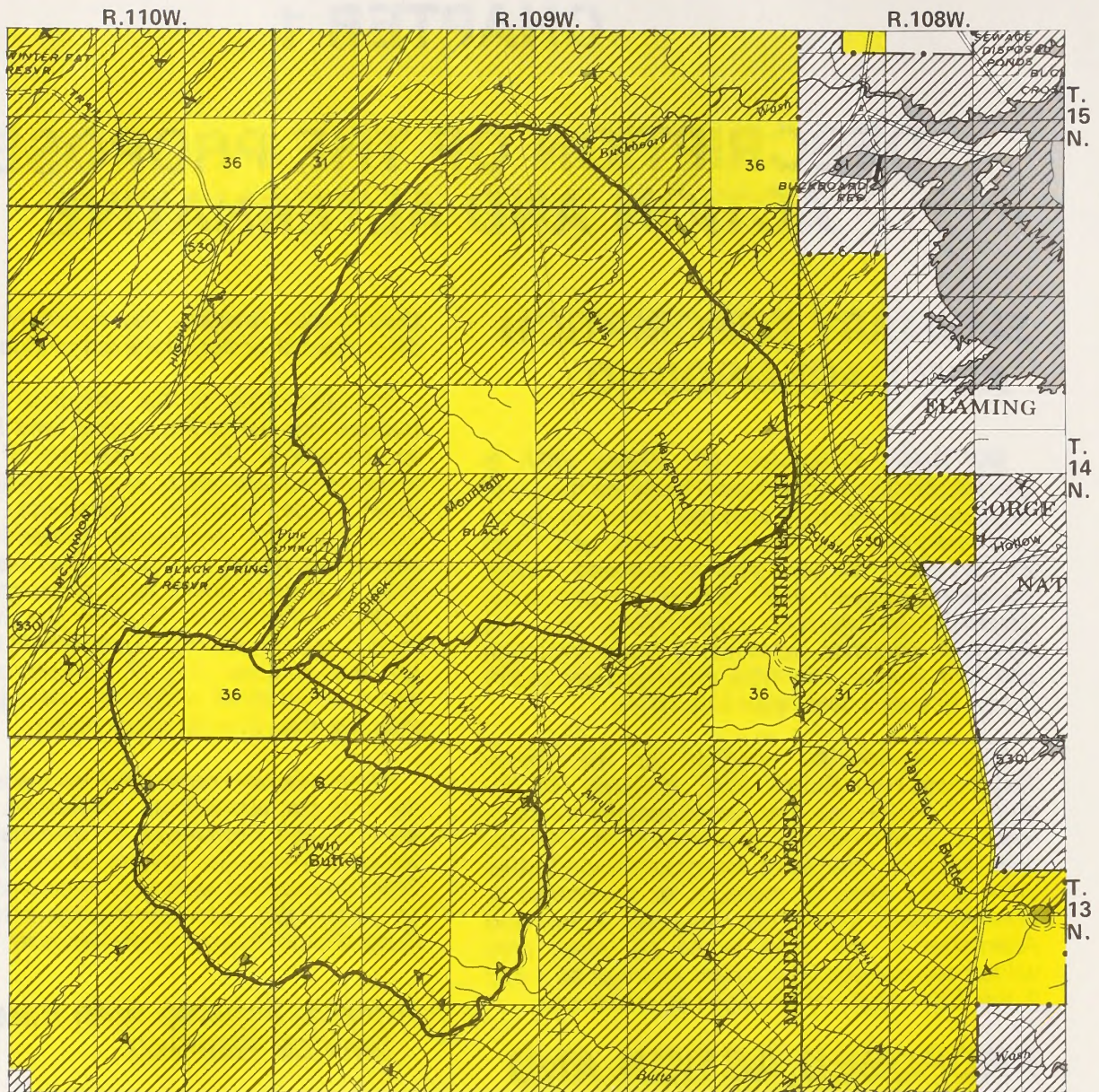
The alternative to the proposed action is to manage the Devils Playground-Twin Buttes WSA as wilderness. The implications of wilderness management are summarized in Table D-1 of the District-wide Analysis. Wilderness designation would provide increased protection to the wilderness values as well as other resources. The WSA is entirely public land, although on approximately 10 percent of the WSA, the State of Wyoming owns the mineral rights. Pre-FLPMA oil and gas leases cover only 20 percent of the WSA, which would make wilderness management more effective than in most other WSAs.




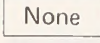

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values in the Devils Playground-Twin Buttes WSA. Other alternatives were not considered realistic or as responsible resource management under the Federal Land Policy and Management Act of 1976.

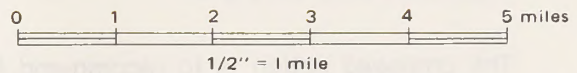
Interrelationship With Forest Service Planning

One mile to the east of the WSA is the Flaming Gorge National Recreation Area (NRA), administered by the Ashley National Forest. The NRA is managed primarily for recreation and enjoys considerable regional recreation use in terms of boating, camping, fishing, waterskiing, and other water sports.

Present and future management of the NRA would not conflict with either wilderness or non-wilderness management of this WSA. Recreation opportunities afforded by the NRA could either draw potential use from this WSA, or provide an opportunity for additional use of this area, if it became wilderness.



-  Wilderness Study Area Boundary
-  Public Land (Administered by BLM)
-  Private Land
-  State Land
-  Federal Minerals



Map DP-1
 Devils Playground-Twin Buttes WSA
LAND AND MINERAL STATUS

CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The climate of the Devils Playground-Twin Buttes WSA is semiarid. Average annual precipitation is between seven and nine inches; and because evaporation potential exceeds precipitation, a net annual deficit of soil moisture exists. During the summer rain showers are quite frequent, but often amount to only a few hundredths of an inch. Snow falls frequently from November through May and averages between 20 to 40 inches annually. The prevailing wind is from the west-southwest and the average wind speed is 11 mph. Temperature readings at the Green River Station ranged from a mean maximum of 88° F. in July to a mean minimum of 6° F. in January.

AIR QUALITY

Within the Devils Playground-Twin Buttes WSA air quality is good. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) do not exceed allowable standards (Science Applications, Inc. 1980). In general the monitored particulate levels are not high. Visibility in the WSA is generally good.

TOPOGRAPHY

The Devils Playground-Twin Buttes WSA lies west of the Flaming Gorge Reservoir. It is characterized by highly eroded badland areas surrounding two large mesas of high relief: Black Mountain and Twin Buttes. Elevation in the WSA ranges from 6,200 feet in the northern washes of Devils Playground to 8,012 feet on Twin Buttes to the south.

GEOLOGY

The Devils Playground-Twin Buttes WSA lies in the Bridger Basin which is a sub-basin of the Green River Basin. The Green River Basin is a broad, gently dipping syncline with a north-south axis (Koenig 1960) and is bounded by the Uinta Mountains on the south, the Wyoming Range on the west, the Wind River Mountains on the north-

east, and the Rock Springs Uplift on the east. The Bridger Basin is probably the deepest of the basins making up the Green River Basin.



Devils Playground-Twin Buttes WSA.

Rocks from the Bridger Formation (Eocene age) and Bishop Conglomerate (Oligocene or Miocene age) outcrop in the Devils Playground-Twin Buttes WSA. The Bridger Formation is from 1,762 to 1,967 feet thick and is composed of the following types of sediment: thin, freshwater tuffaceous limestone, marl and associated lacustrine sandstone and shale; channel sandstone deposits; floodplain deposits; and thin, discontinuous lignitic and coaly deposits.

The Bishop Conglomerate consists almost entirely of well-rounded cobbles and boulders eroded from the high part of the Uinta Mountains. Boulders and cobbles of limestone and metamorphic rock are locally common.

Mineral Resources

Those leaseable minerals known to occur in the WSA include oil and gas, oil shale, trona (sodium), coal, and phosphate. There is no oil and gas production in the WSA at present. The nearest producing wells are located in the Clay Basin Field (25 miles southeast) and Church Buttes Field (20 miles northwest). Two wells have been drilled within the WSA: one well was drilled to 5,000 feet and was unsuccessful; a second well was drilled to 19,248 feet and reached some gas in the Nugget and Dakota formations. This well is currently shut-

DEVILS PLAYGROUND-TWIN BUTTES

in for possible production at a later date. No exploratory drilling has been conducted since 1975.

Approximately 20 percent of the WSA is covered by pre-FLPMA oil and gas leases and another 10 percent of the WSA is underlain by state-owned minerals. The remaining area is either covered by post-FLPMA leases or is unleased (see Map DP-2).

The entire WSA is under an oil shale withdrawal (Executive Order 5327—May 20, 1930, and Public Land Order 4522—1967) and is segregated from mining to protect the oil shale deposits. However, these oil shale deposits are of no commercial interest, for they are usually low in grade and thin bedded. Recently there has been some public interest in the shallow oil shale reserves of the Washakie and Green River basins, however, no interest has been indicated within the WSA. The oil shale reserves in the WSA are deep and could not be economically recovered at present. The WSA has low development potential for oil shale.

The oil shale withdrawal is presently under review by BLM. If the review indicates that it no longer serves a public purpose, it will be revoked and the area would be open to mining claims.

Uranium, phosphates, coal, and clinoptilolites (see Glossary) are also known to occur in the WSA, but they have low development potential (BLM 1981c).

The potential for sodium development within the WSA was formally recognized by Minerals Management Service's (formerly Geological Survey) delineation of the Green River Basin Known Sodium Leasing Area (KSLA). The WSA is almost entirely within the KSLA boundaries and is considered to have moderate development potential. However, the WSA portion of the KSLA has thinner, deeper beds, sodium (trona) halite mix deposits; development is unlikely for many years. BLM and industry projections indicate that existing sodium reserves under lease can meet market demands for hundreds of years (BLM 1982a).

The outcrops of the Bishop Conglomerate in the WSA are of sufficient quality to be used as highway construction material. The sand and gravel reserve is substantial, but it is not usable because it is found on mesa tops with steep surrounding topography. The sand and gravel resource has low development potential, due to its inaccessibility.

Paleontological Resources

Marine fossils and other paleontological resources were noted in this WSA during the intensive wilderness inventory.

SOILS

The Devils Playground-Twin Buttes WSA was included in a third order soil survey completed in 1979 for BLM, by Soil and Land Use Technology, Inc. (SaLUT). Detailed site-specific information is contained in the soil survey report (SaLUT 1979) and soil maps, which are both available for review in the Rock Springs District Office.

Most soils in the WSA were derived from shales, sandstones, or alluvium. Generally, soils have formed in residual material weathered from bedrock, colluvium, alluvium, basin deposits, and outwash. In much of the area, the soils are less than 40 inches deep over bedrock.

Within the WSA large areas of badland exist with virtually no soil. These areas are predominantly exposed shales and sandstone outcrops, with small areas of soil developed on alluvial deposits. Soils throughout the area vary in texture from fine sandy loam, sandy loams, gravelly sandy loams, and loamy fine sand to gravelly loam. In other areas undifferentiated riverwash may be found. Most soils exist in associations or complexes whose components are not possible to map at this soil survey's intensity.

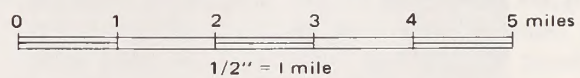
These soils are not suited for cropland as most are high in sodium, and in many cases, contain gypsum. The highest potential for the soils is to produce native vegetation suitable for livestock grazing and wildlife habitat.

WATER RESOURCES

Numerous intermittent streams constitute the WSA's drainage system. The dominant drainage is to the east into the Flaming Gorge Reservoir. Water quality in the intermittent streams is low, due to considerable soil erosion. There are 10 livestock reservoirs within the boundaries of the WSA. The condition of the reservoirs varies from complete disrepair to functional and operative.



- Wilderness Study Area Boundary
- Pre-FLPMA Leases
- Post-FLPMA Leases
- Not presently leased
- State Minerals



DEVILS PLAYGROUND-TWIN BUTTES

VEGETATION

The most dominant vegetation type found in the WSA is sagebrush-grass. Big sagebrush is the dominant subtype. This vegetation type can be found in loamy, sandy, and some shallow, nonalkaline soils. The more common plants associated with big sagebrush include thickspike wheatgrass, bottlebrush squirreltail, needle-and-thread, Indian ricegrass, and various forbs.

Utah juniper occurs in shallow soils with deeper pockets which collect local runoff, thereby producing the higher precipitation microclimate that juniper requires. Big sagebrush communities and rock outcrops occur intermittently in the juniper woodlands. Species composition is similar to the sagebrush sites, with the addition of juniper, some mountain mahogany, and a greater abundance and variety of forbs.

Very little vegetation grows in the badlands, which comprise the vast majority of the WSA. However, there are some pockets of sagebrush, Nuttall saltbush, and juniper. The shale and saline soils are dominated by salt tolerant plants. The most common plants include Gardner's saltbush, bud sagebrush, bottlebrush squirreltail, Indian ricegrass, western wheatgrass, and various forbs.

Vegetation production within the WSA varies considerably with the deeper loamy sites producing the greatest amounts of vegetation. Most of the vegetation is best suited for grazing and wildlife habitat. Overall, the WSA is not a productive area.

WILDLIFE

The Devils Playground-Twin Buttes WSA provides a variety of wildlife habitat. The habitat types within this area include badlands, sagebrush steppe, and juniper. The WSA provides habitat for a surprising variety of animal life including big game, song birds, raptors, small mammals, and sage grouse. Of the major big game species, only mule deer and pronghorn antelope are found within the WSA. The area provides yearlong antelope and deer range. The WSA does not provide any habitat for moose or elk.

WILD HORSES

There are no wild horses in the Devils Playground-Twin Buttes WSA, and there are no plans to include any part of the WSA in a wild horse herd management area.



Juniper dots the badlands of Devils Playground-Twin Buttes WSA

DEVILS PLAYGROUND-TWIN BUTTES

LIVESTOCK GRAZING

The WSA is within the Henry's Fork grazing allotment. The allotment is made up of six pastures (A, B, C, D, E, and F) and the WSA is within pastures E and F. All licensed use is by cattle and sheep. Authorized sheep use occurs during the winter (November 1 to May 1). Cattle use, for the most part, is confined to the summer grazing season (May 1 to November 1).

Total licensed actual use for cattle in pastures E and F is 1,962 AUMs. This amounts to 465 head of cattle for the summer months. Of the total livestock use, 168 AUMs are allocated within the actual WSA. Total licensed actual use for sheep within Pastures E and F is 12,692 AUMs. This amounts to 30,122 sheep for the winter months. Of the total sheep use, 1,420 AUMs are allocated within the actual WSA.

The only range improvements located within this WSA are ten small earthen reservoirs. The condition of the reservoirs, which were developed for livestock, varies from complete disrepair to functional and operative. These reservoirs influence cattle distribution within the allotment. However, they are causing no overuse within the WSA. There is an adequate number of other water developments throughout the allotment to prevent this. None of the existing range improvements are damaging to the water or vegetation resources in the WSA.

WILDERNESS INCLUDING RECREATION

The BLM inventoried the Devils Playground-Twin Buttes area and all contiguous lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory the Bureau determined that the WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Size

This WSA contains 24,276 acres of public land. The size was originally reported as 26,605 acres. This WSA is a combination of two wilderness in-

ventory units—Devils Playground which was 16,704 acres and Twin Buttes which was 9,901 acres. No changes in acreage were made during the intensive inventory; however, due to public comment and review, 2,329 acres were dropped due to intrusions, leaving the size at 24,276 acres.

Naturalness

The Devils Playground-Twin Buttes WSA is essentially natural in character. Closer inspection reveals six seismic trails, six two-track trails, ten reservoirs, and two fences. The seismic trails and two-track trails vary from faint and obscure, to bladed scars and substantially noticeable. However, these intrusions do not detract from the overall natural character of the WSA.

Outstanding Opportunities (Recreation)

The WSA's diverse topography and size combine to screen and disperse use, and provide ample opportunities to experience solitude. Present recreation use of the WSA is probably limited. Antelope and deer hunters utilize the WSA, and there is also some opportunity for hunting of predators (coyotes). Most off-road vehicle use is hunter related. Rockhounding occurs on an infrequent basis, and a small amount of overnight camping probably occurs.

Nearby recreation opportunities center on the Flaming Gorge National Recreation Area which draws thousands of visitors every year. Recreation opportunities afforded by the NRA could either draw potential use from this WSA, or provide an opportunity for additional use of this area, if it became wilderness.

Supplemental Values

The WSA has interesting and unusual geologic features. Fossil deposits and evidence of early man can be found throughout the WSA.

CULTURAL RESOURCES

The Devils Playground-Twin Buttes WSA is characterized by abundant prehistoric remains. Indians pursuing a nomadic, hunter-gatherer lifestyle occupied this area continuously for 9,000 years. The Pine Springs site (Pine Springs Cultural ACEC), which is adjacent to the WSA, has been

DEVILS PLAYGROUND-TWIN BUTTES

scientifically excavated. It has yielded great quantities of information on ancient hunters of now-extinct big game, up to recent proto-historic Shoshones. The depth, stratigraphy, and antiquity of this campsite make it extremely significant, even though it has been damaged by recent vandalism. The Pine Springs site is eligible for inclusion on the National Register of Historic Places.

No area within the WSA has been inventoried at the Class III level, but many sites (all prehistoric) are nevertheless known and recorded. The south and southeast flanks of Black Mountain are covered by one of the most extensive and significant tipi ring site in southwestern Wyoming; over half of the known stone circles are within the WSA. The ground surface for miles around Black Mountain is littered with flakes of tiger chert, a locally occurring banded brown chalcedony that was extensively worked by the Indians. Evidence of their stone tool manufacture probably covers the better part of the WSA. Existing cultural resource data are more than adequate to support the conclusion that the WSA, especially the central portion, is a sensitive area of highly significant values.

VISUAL RESOURCES

The WSA is classified as Visual Resource Management Class II. The basic management guidelines for this visual resource management class are described in detail in the District-wide Analysis, Chapter 2, Visual Resources.

NOISE

Existing noise levels within the WSA are low with occasional increases from two sources: oil

and gas activities and U.S. Air Force Strategic Air Command's low-level training flights for B-52 bombers. The latter occurs infrequently and the chances of being in the WSA during an overflight are slim. The oil and gas activities do not cause much disturbance in the WSA, except for an occasional truck passing nearby and during geophysical exploration activities, particularly where explosives are used.

LAND USE CONSTRAINTS

The lands within and surrounding the Devils Playground-Twin Buttes WSA are almost exclusively public lands administered by BLM. The WSA is zoned as an agricultural district. As an agricultural district, there are numerous uses which may be permitted in the area. Some of these uses are: mineral exploration and drilling; oil and gas exploration and development; railway rights-of-way; and transmission lines, stations, and towers. More detailed information on zoning districts is available in the Zoning Resolution of Sweetwater County, Wyoming, and in the District-wide Analysis, Chapter 2, Land Use Constraints.

SOCIOECONOMIC CONDITIONS

This WSA is located in Sweetwater County. The current socioeconomic conditions of Sweetwater County are addressed in the District-wide Analysis, Socioeconomic Conditions.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines listed in the District-wide Analysis, Chapter 3, the following assumptions are used for impact analysis:

1. It is assumed that at least oil and gas exploration activities would occur in the WSA, and possibly minor development. The oil and gas development potential of this WSA is low, and only 20 percent of the WSA is pre-FLPMA leased.
2. It is assumed that in the short term there will be no interest in sodium (trona) development and only minimal interest in the long term. The development of the sodium within 50 to 100 years is considered to be a possibility.
3. Although the Devils Playground-Twin Buttes WSA lies within an area of oil shale occurrence, development of this resource will probably not occur due to its low development potential.
4. Although the WSA is part of the Green River Coal Region, the coal found in the WSA has low development potential because it is found in thin, discontinuous, lignite beds. Development of the coal resource within the WSA is considered to be unlikely.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action no impacts would occur to air quality. Pollution levels are currently low and there would be little, if any, activity in the area significant enough to cause air quality to deteriorate.

Topography

Under the proposed action no impacts to topography are anticipated. Oil and gas activities would be mitigated to reduce or eliminate any long-term topographical modifications.

Paleontological Resources

Under the proposed action impacts to paleontological resources in the WSA would be negligible, due to the minimal oil and gas activities anticipated.

Soils

Under the proposed action minor adverse impacts would occur to soils. Surface disturbance of soils would increase as oil and gas exploration activities occurred in the WSA. As a result of surface disturbance, soils would be subject to increased water and wind erosion. The impact of soil disturbance is usually long term, lasting until reclamation is completed and can be irreversible.

Water Resources

Under the proposed action no impact would occur to water resources. Any possible impacts from surface disturbing activities, e.g., oil and gas exploration activities, to intermittent streams could be mitigated through application of site-specific mitigation requirements.

Vegetation

Under the proposed action minor adverse impacts would occur to vegetation. Disturbance to vegetation may increase slightly, as oil and gas exploration activities occur in the WSA. Disturbance to vegetation caused by off-road vehicle use (recreation primarily) would probably not increase from the present situation. Vehicle use would be restricted to designated roads and trails except where authorized, such as in oil and gas exploration activities.

In instances where soil is disturbed and native vegetation destroyed, conditions are created which are often favorable for the establishment of invader species both native and non-native, such

DEVILS PLAYGROUND-TWIN BUTTES

as halogeton or Russian thistle. These populations then become seed sources for further invasions of surrounding newly disturbed areas.

Wildlife

Under the proposed action no impacts would occur to wildlife. It is anticipated that big game populations (pronghorn antelope and mule deer) would remain at approximately the same levels. The populations of the other wildlife species found in the WSA (songbirds, raptors, etc.) are also expected to remain at the same levels. Over the long term, any increase in surface disturbance and oil and gas exploration could contribute to a slight decrease in wildlife numbers.

Livestock Grazing

Under the proposed action no impact would occur to livestock grazing or management. The amount or type of livestock use would not change from the present situation unless range monitoring studies showed an increase or decrease in forage available to livestock. As oil and gas exploration takes place, new roads may be built that would improve access for livestock management. However, there may be some loss of available forage, due to anticipated road development and related activities. Vehicle access by ranchers would be limited to designated roads and trails as outlined in the Salt Wells ORV Implementation Plan.

Presently, no new range improvements are planned for this area, but the potential for new improvements exists. Existing improvements could be maintained by conventional means, and new facilities could be authorized. There may be some beneficial impacts for livestock management if new water sources are developed during oil and gas exploration activities.

Wilderness Including Recreation

Wilderness Values

Under the proposed action minor adverse impacts would occur to wilderness values, due to anticipated oil and gas activities. However, since only minimal oil and gas exploration activity is anticipated, many of the wilderness values would be retained. Implementation of the proposed action would result in the loss of the opportunity to

establish this WSA as wilderness. However, there are better examples of badlands with wilderness characteristics, such as Honeycomb Buttes WSA.

Recreation Opportunities

Recreation resources and uses within the WSA would not be impacted as a result of the proposed action. Motor vehicle use would be limited to designated roads and trails. These vehicle restrictions would cause a negligible decrease in vehicle-dependent recreation uses, primarily hunting.

Other limited recreation uses such as hiking, horseback riding, rockhounding, and wildlife observation are expected to remain at present levels, due to the limited water supplies available in the WSA.

Cultural Resources

Under the proposed action no impacts would occur to cultural resources. Anticipated oil and gas exploration activities in the WSA could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Increased access due to oil and gas exploration activities may cause an increase in illegal collection of artifacts and vandalism of known cultural sites. However, the Pine Springs Cultural ACEC, which is adjacent to the WSA, contains the greatest cultural values of the area. The management of the ACEC would protect these outstanding cultural values.

Visual Resources

Under the proposed action no impacts would occur to visual resources. The WSA would continue to be managed under VRM Class II objectives. No impacts from anticipated oil and gas activities would be sufficient to alter this rating or adversely impact the visual values.

Noise

Under the proposed action no increase in noise level is anticipated. Noise levels would increase slightly if oil and gas activities exceed anticipated

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levels. U.S. Air Force low-level bomber training flights would continue sporadically over the WSA.

Land Use Constraints

The proposed action would not conflict with county zoning, and there would be no conflict with the management on the adjoining state lands.

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives is a composite of the general trend in resource use for all the WSAs.

Under the proposed action no changes to proprietor's income would accrue to the livestock industry. The proposed action would allow oil and gas exploration and development throughout the WSA. Activity by the oil and gas industry is expected to increase employment, income, revenues, and taxes as a result of exploration and/or development.

Increases in employment, income, revenues, and taxes are not expected from possible sodium development, due to the large quantity of sodium reserves closer to the existing mines and soda ash plants.

IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Under wilderness management no impacts would occur to air quality. Pollution levels are currently low and there would be little, if any, activity in the area significant enough to cause air quality to deteriorate.

Topography

Under wilderness management no impacts to topography are anticipated. Allowed oil and gas activities on pre-FLPMA or state leases would be mitigated to reduce or eliminate any long-term topographical modifications.

Paleontological Resources

Under wilderness management impacts to fossil resources in the WSA would be negligible, due to the minimal oil and gas activity anticipated on pre-FLPMA leases.

Soils

Under wilderness management minor beneficial impacts would occur to soils. Wilderness designation would help to protect the soil from surface disturbing activities. Surface disturbance to soils would decrease as a result of less motor vehicle use. Although allowed oil and gas activities on pre-FLPMA and state leases would cause some soil disturbance, it would probably be minimal.

Water Resources

There would be no impact to the water resources within the WSA. Any possible impacts from surface-disturbing activities (e.g., allowed oil and gas exploration activities) to Intermittent streams could be mitigated through application of at least nondegradation requirements.

Vegetation

Under wilderness management minor beneficial impacts would occur to vegetation. Destruction of vegetation would decrease as a result of eliminating motor vehicle use. In the short term the expiration of pre-FLPMA leases and cessation of exploration activities would decrease destruction of vegetation.

Wildlife

Under wilderness management no impacts would occur to wildlife. The elimination of motor vehicles within the WSA would decrease disturbances to wildlife. Over the short term wildlife

DEVILS PLAYGROUND-TWIN BUTTES

numbers would probably not increase, but would remain approximately the same due to habitat limitations.

Livestock Grazing

Under wilderness management no impacts would occur to livestock grazing. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present situation unless monitoring studies showed an increase or decrease of forage available to livestock.

If the WSA is designated wilderness, it is anticipated that the number of range improvements that could be implemented would decrease slightly. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock.

There could be some loss of efficiency in livestock management, in that motor vehicles would generally be excluded from the area if designated wilderness. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determined that other alternatives (such as horseback) do not exist and wilderness values would not be impaired.

Wilderness Including Recreation

Wilderness Values

Wilderness management would have highly beneficial impacts on wilderness values. Wilderness designation would help to protect the unique values of this WSA. BLM's opportunity to manage this WSA as wilderness would be much greater than in most other WSAs. The low percentage of pre-FLPMA and state leases and the low oil and gas potential combine to make preservation of this WSA much more feasible. Designation of the WSA as wilderness would increase the diversity of the National Wilderness Preservation System. However, this WSA is not an outstanding example of badlands. There are other areas, such as Honeycomb Buttes WSA, that would make a greater contribution.

Recreation Opportunities

Under wilderness management no impacts would occur to recreation opportunities. Motor vehicles would not be permitted in the WSA, thereby eliminating vehicle-dependent recreation use. Access into the WSA would have to be on horseback or on foot. With motor vehicle use being restricted, hunting use would probably decrease slightly over the short term.

Other recreation activities such as hiking, horseback riding, etc., would continue to be limited, due to lack of water. Wilderness designation may initially draw a few more people to the WSA, due to the increased publicity associated with wilderness designation.

Cultural Resources

Under wilderness management no impacts would occur to cultural resources. Allowed oil and gas exploration activities on pre-FLPMA leases could cause a slight increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Wilderness management would have moderately beneficial impacts to visual resources within the WSA. The VRM classification would be upgraded to Class I by BLM, and would be managed as such.

Noise

The noise level in the WSA is expected to decrease under wilderness management, having a moderately beneficial impact. This decrease in noise level is due to the elimination of noise-producing motor vehicles in the WSA. Negotiations would be initiated with the U.S. Air Force to alter the route of their low-level bomber training flights.

DEVILS PLAYGROUND-TWIN BUTTES

Land Use Constraints

Wilderness management would not conflict with county zoning, but it could conflict with the management of state minerals and adjoining state lands. Under wilderness management the area would remain an agricultural zone. No developments (factories, plants, etc.) would be permitted in the WSA, unless associated with pre-FLPMA lease development. Most rights-of-way for roads, pipelines, etc., would not be allowed unless wilderness values were unimpaired. These rights-of-way would have to be considered on a case-by-case basis.

Socioeconomic Conditions

Under wilderness management oil and gas activities would be allowed onsite on pre-FLPMA leases in the WSA. If discoveries are not made (the area has low potential for oil and gas), the level of regional employment, income, revenues, and taxes would be expected to remain unchanged. No changes in proprietor's income would accrue to the livestock industry.

SUMMARY OF IMPACTS

Site-specific impacts for the Devils Playground-Twin Buttes WSA are summarized as follows: Implementation of the proposed action would have no impact on the present natural resource base. Wilderness management would have moderately beneficial impacts on the present natural resource base.

Under the proposed action minor adverse impacts would occur to wilderness values, due to anticipated oil and gas exploration activities. Wilderness management would have highly beneficial impacts on wilderness values. This beneficial impact would occur because wilderness protection measures would be more effective in this WSA, due to the low oil and gas potential and the low percentage of pre-FLPMA and state leases. Recreation opportunities would not be impacted under the proposed action or the wilderness alternative.

Under the proposed action minor beneficial impacts would occur to the present socioeconomic conditions and the oil and gas industry. Wilderness designation would not affect present socioeconomic conditions or the oil and gas industry.

SUMMARY OF FINDINGS

The study was conducted in the form of a series of interviews with the principal officials of the various departments of the Government of India, and with a number of leading business and industrial leaders. The results of the study are summarized in the following paragraphs.

The first finding is that the Government of India is not yet fully aware of the importance of the private sector in the development of the country. The second finding is that the Government of India is not yet fully aware of the importance of the private sector in the development of the country. The third finding is that the Government of India is not yet fully aware of the importance of the private sector in the development of the country.

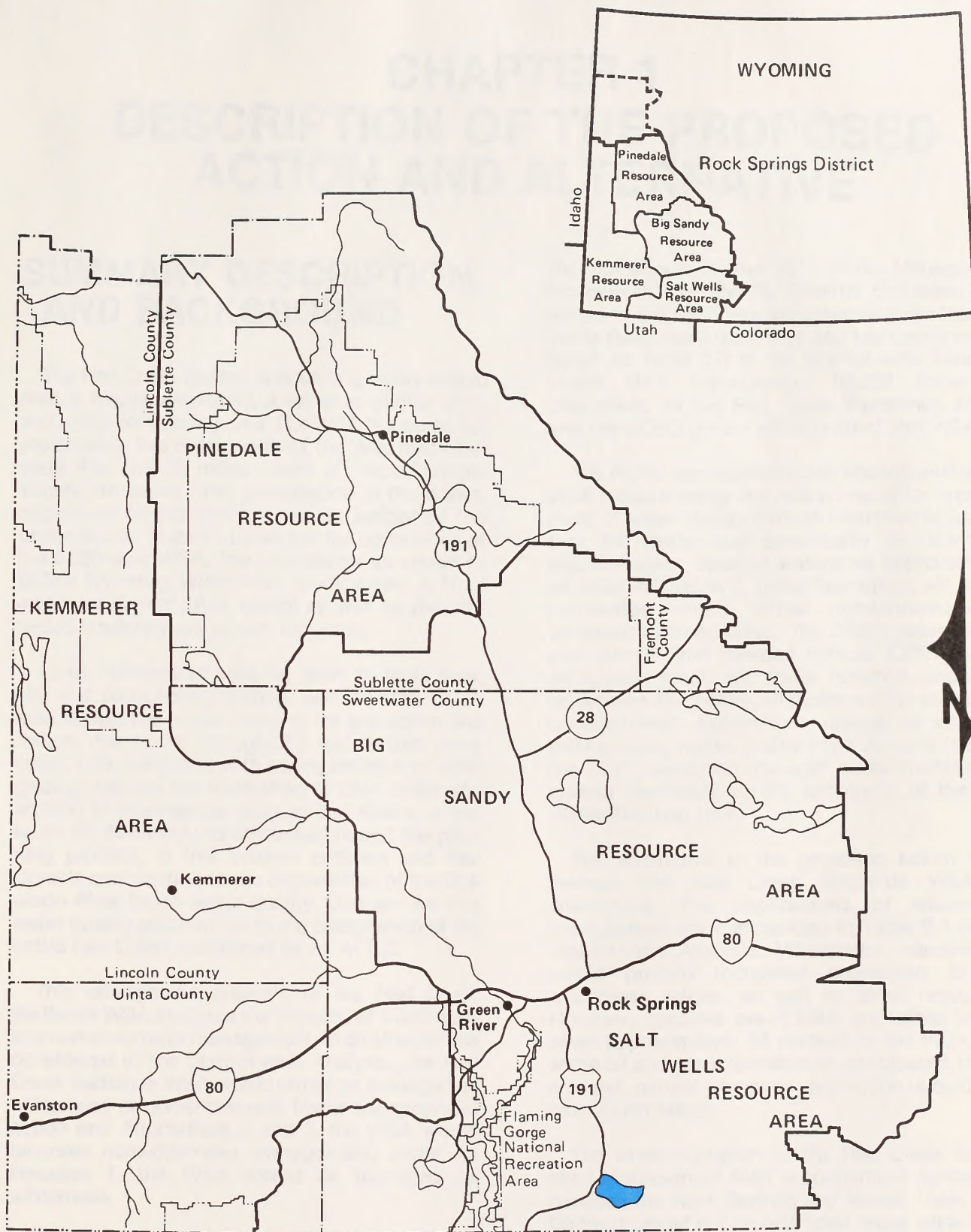
The fourth finding is that the Government of India is not yet fully aware of the importance of the private sector in the development of the country. The fifth finding is that the Government of India is not yet fully aware of the importance of the private sector in the development of the country.

1. The Government

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2. The Private Sector

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CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

SUMMARY DESCRIPTION AND BACKGROUND

The Red Creek Badlands WSA is a highly scenic area, a fragile watershed, a valuable wildlife area, and a popular hunting area. The WSA is located approximately five miles north of the Wyoming-Utah state line and 35 miles south of Rock Springs. Vegetation varies from greasewood in the draws, sagebrush on the bench areas, to juniper on the upper slopes. Map RC-1 portrays the boundaries of the 8,020 acre WSA. The boundaries as shown in BLM's *Wyoming Wilderness Study Areas, A Final Inventory Report* (BLM 1981h) as well as the corrected boundary are shown for clarity.

Large numbers of wildlife, such as mule deer, elk, and pronghorn antelope, use the Red Creek area during the winter months for protection and forage, due to the topography and limited snow cover. This, combined with spring sheep and cattle grazing, caused the watershed to deteriorate and erosion to increase as early as the 1950's. A key issue for this WSA, as discussed during the planning process, is this erosion problem and Red Creek's contribution to the degradation of the Colorado River Basin water quality. Concern for this water quality problem led to the designation of the entire Red Creek watershed as an ACEC.

This site-specific analysis of the Red Creek Badlands WSA analyzes the impacts of wilderness and nonwilderness management. In all alternatives considered in the District-wide Analysis, the Red Creek Badlands WSA would either be managed as wilderness or nonwilderness. Under the proposed action and Alternatives 2 and 3, the WSA would be under nonwilderness management; under Alternative 1, the WSA would be managed as wilderness.

PROPOSED ACTION AND ALTERNATIVE

The proposed action is to recommend to the President, via the Secretary of the Interior, that this WSA not be designated wilderness. Under the proposed action the WSA would be managed under

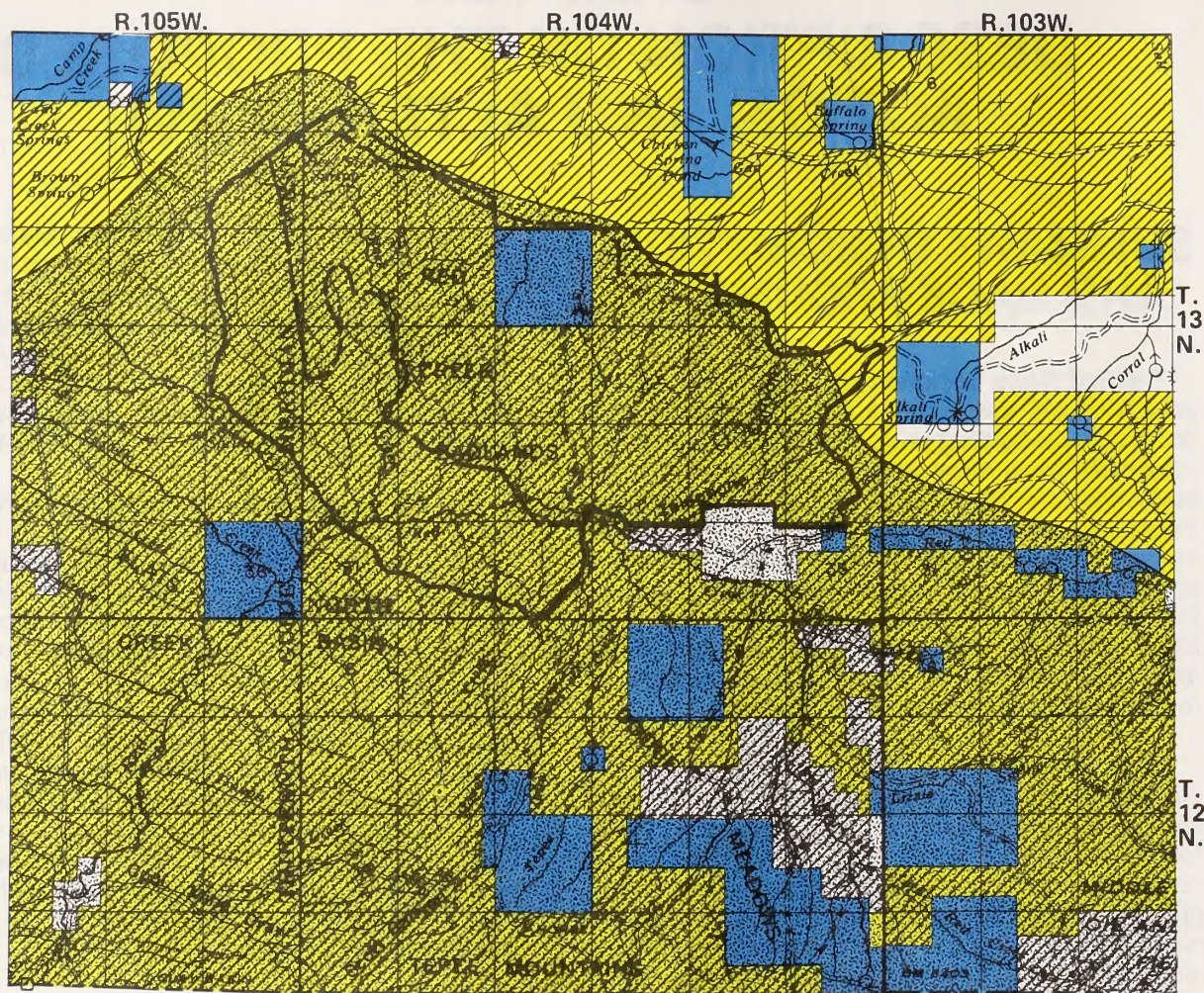
the guidelines of the Salt Wells Management Framework Plan (MFP). Specific decisions contained in the MFP may be obtained from the Salt Wells Resource Area Office and key decisions are listed on Table D-3 in the District-wide Analysis. Under MFP management 59,532 acres are designated as the Red Creek Watershed ACEC, and the ACEC covers virtually all of this WSA.





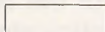


The ACEC management plan encompassing the WSA would manage the area primarily for improvement of water quality through reduction of salinity and silt loads; and secondarily for identified wildlife values. Specific watershed improvements as listed in Chapter 2, Water Resources, will be implemented under either nonwilderness or wilderness management. The ACEC management plan would limit off-road vehicle (ORV) use to designated roads and trails. However, under the wilderness alternative, all motor vehicle use would be eliminated, except that allowed by virtue of valid existing rights. The very few acres outside of the ACEC would be managed under multiple-use criteria applicable to the remainder of the Salt Wells Planning Unit.

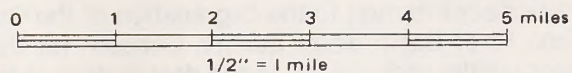
The alternative to the proposed action is to manage the Red Creek Badlands WSA as wilderness. The implications of wilderness management are summarized in Table D-1 of the District-wide Analysis. Wilderness management would provide increased protection to the wilderness values, as well as other resources. However, because pre-FLPMA and state leases cover approximately 58 percent of the WSA, and some oil and gas exploration is anticipated, the increased natural resource protection would not have much effect.

The implementation of the Red Creek Watershed Management Plan, a cooperative agreement between the Rock Springs and Vernal, Utah, BLM Districts would not be restricted under wilderness management.

Wilderness and nonwilderness management are the only two alternatives considered. They represent realistic alternatives for management of the values in the Red Creek Badlands WSA. Other alternatives were not considered realistic or as responsible resource management under the Federal Land Policy and Management Act of 1976.



-  Incorrect Boundary as shown in Wyoming Wilderness Study Areas Final Inventory Report
-  Red Creek Watershed ACEC
-  Revised Wilderness Study Area Boundary
-  Public Land (Administered by BLM)
-  Private Land
-  State Land
-  Federal Minerals



Map RC-1
Red Creek Badlands WSA
LAND AND MINERAL STATUS

CHAPTER 2

AFFECTED ENVIRONMENT

CLIMATE

The general climate of the Red Creek Badlands WSA is characteristic of a semiarid region. Temperature readings at the Rock Springs Station (the nearest weather station), ranged from a mean maximum of 86° F. in July to a mean minimum of 10° F. in January. Average annual precipitation is 10 to 14 inches, and a net annual deficit of soil moisture exists. The period of maximum precipitation occurs in the spring and early summer. The average growing season is approximately 125 days. The prevailing wind is from the west-southwest and the average wind speed is 11 mph.

AIR QUALITY

Within the Red Creek Badlands WSA air quality is good. Criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, hydrogen sulfide, and lead) do not exceed

allowable standards (Science Applications, Inc. 1980). In general, the monitored particulate levels are not high and visibility is good.

TOPOGRAPHY

The Red Creek Badlands WSA derives its name from the red sandstones and mudstones of the Wasatch Formation of Eocene age which outcrop in the valley. The headwaters of Red Creek begin at the base of Pine Mountain and flow in an arc—first north, then west, and finally south around Teepee Mountain.

The WSA varies from sagebrush flats above the northern rim, to rugged eroded juniper badlands which blend to sagebrush and grass, to the low bluffs and draws along Red Creek. South of Red Creek, the long draws slope steeply upward to Teepee Mountain, which is capped with a small stand of limber pine and Douglas fir. Elevations vary from 7,000 to 7,900 feet within the WSA.



Red Creek valley and typical badlands.

RED CREEK BADLANDS

GEOLOGY

The WSA lies at the south end of the Rock Springs Uplift, between the Green River and Washakie basins. The Wasatch Formation of Eocene age is the major geologic surface formation in the wilderness study area. This formation consists of red and gray shales and gray sandstones. These shales give Red Creek its red color for which it was named. On the east side of the WSA, the Green River Formation (Eocene age) is exposed.

Mineral Resources

The Red Creek Badlands WSA is underlain by coal of unknown extent. Most of the WSA is within a coal land withdrawal established by Executive Order on July 13, 1910. However, this and other withdrawals that may no longer serve a public purpose are under review by BLM for revocation. Carbonaceous shale and lenticular beds of sub-bituminous coal are common in the upper 3,000 feet of the Wasatch Formation (Bradley 1964). In a few places these coal beds have been mined for domestic use, but coal development in the WSA is considered to have low potential.

Part of the WSA falls within an oil shale withdrawal (Executive Order 5327 and Public Land Order 4522) which closes that area to mining claim location. This withdrawal is also under review by BLM for revocation. Expressions of public interest in oil shale development within the Rock Springs District (largely from Rocky Mountain Energy Company), indicates development interest focuses on the Washakie Basin and other portions of the Green River Basin.

Fourteen pre-FLPMA and five post-FLPMA oil and gas leases fall either partially or entirely within the WSA boundary (see Map RC-2). The WSA is split nearly equally between pre-FLPMA and post-FLPMA leasing, disregarding the eight percent state-owned minerals and approximately 200 acres of unleased land.

Previous oil and gas exploratory drilling (unsuccessful) within the WSA was at depths of less than 9,000 feet. Renewed interest in the oil and gas potential of the area has resulted in exploratory drilling to greater depths. Although no deep exploratory wells have been drilled in the WSA, the 1981 Edwards Ranch Unit Agreement (exploratory agreement, see Map RC-2) proposes to drill at least one well to 13,000 feet to explore the Weber For-

mation. This well may fall within the WSA boundaries. Southwest of the WSA an unsuccessful exploratory well of similar depth (14,800 feet) was drilled by Exxon in 1977 (southeast quarter of the northeast quarter, section 35, T. 13 N., R. 105 W.).

The oil and gas potential in the WSA is unknown. Drilling activity within the Edwards Ranch Unit should provide some indication of oil and gas potential at greater depths.

There are no indications of other mineral values or public interest in other mineral values within the WSA.

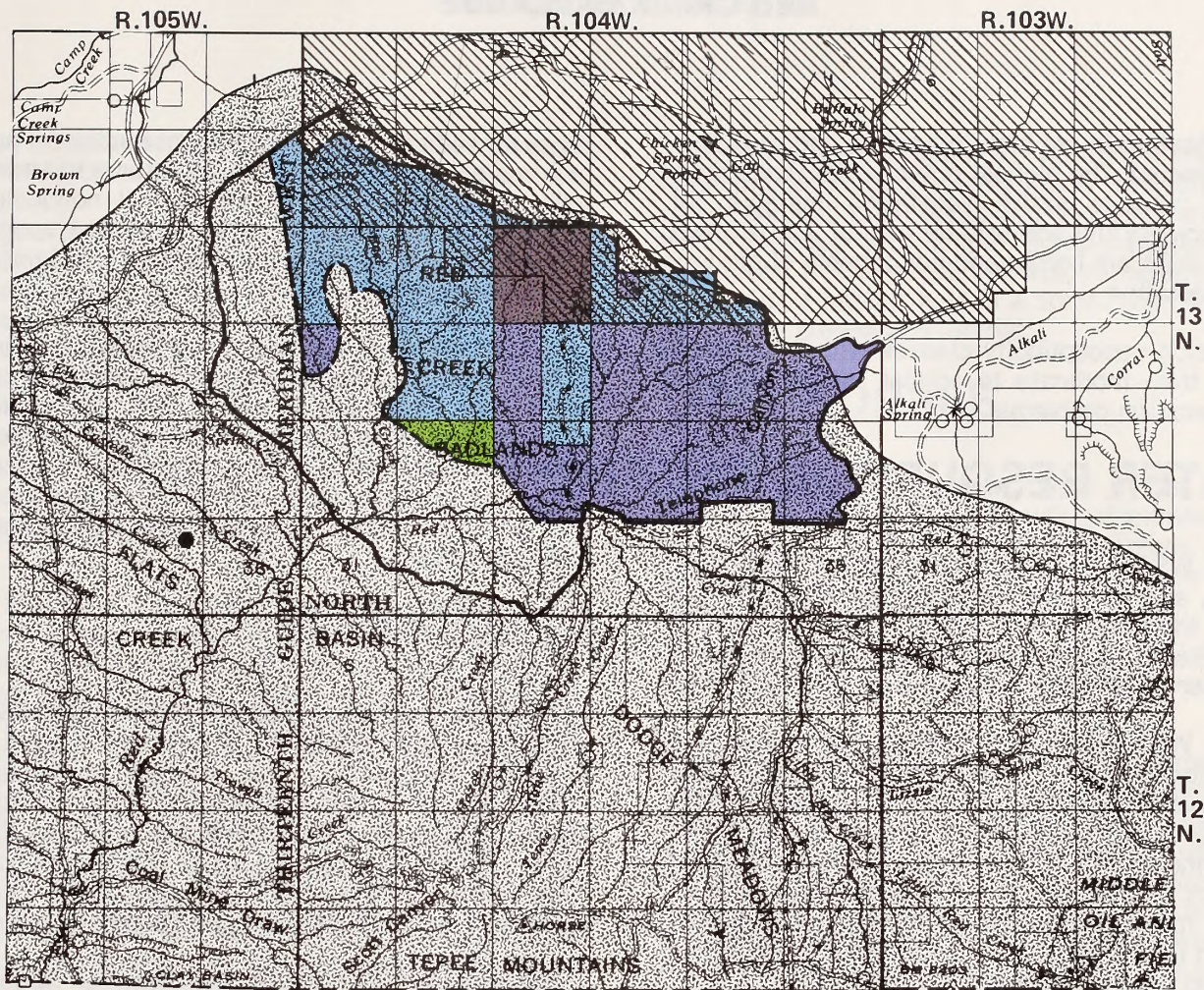
SOILS

A soil survey of the WSA was conducted in 1973 and 1974, with the final report completed in 1975. The inventory was conducted by the Soil Conservation Service in cooperation with the BLM. The survey was a third order, semi-detailed soil survey. Detailed site-specific information is contained in the soil survey maps and inventory report which are available for review in the Salt Wells Resource Area Office.

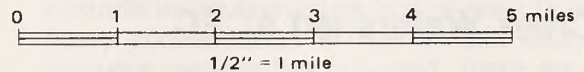
Most soils in the WSA were derived from shales or sandstones. In most of the area, soils are less than 40 inches thick over bedrock. The WSA is almost exclusively within two soil mapping units, Red Creek-Thermopolis and Rock Outcrop-Redwash. The Red Creek-Thermopolis complex consists of two soil series, both of which are shallow soils. The Red Creek series was formed from sandstone while the Thermopolis series was formed from shale. The Redwash series, also found in this mapping unit, is a shallow soil formed from sandstone. The texture of the Red Creek is fine sandy loam, and the Thermopolis and Redwash are sandy loams. Runoff from these soils is rapid and the erosion hazard is severe. This soil mapping unit is severely gullied and is one of the main sediment producers to Red Creek.

The Rock Outcrop-Redwash complex covers the most area in the WSA. The Rock Outcrop component consists of bare sandstone and shale outcrops of the Wasatch Formation. Typically, all soils are reddish in color.

Other soils occur in the WSA, but in relatively insignificant acreages. The soils are primarily shallow and range in texture from sandy loam to loamy. These soils are not suited to agricultural



- Incorrect Boundary as shown in Wyoming Wilderness Study Areas Final Inventory Report
- Red Creek Watershed ACEC
- - - Revised Wilderness Study Area Boundary
- Pre-FLPMA Leases
- Post-FLPMA Leases
- State Minerals
- Not Presently Leased
- Edwards Ranch Exploratory Unit
- Dry Hole



Map RC-2
Red Creek Badlands WSA
OIL AND GAS LEASES

RED CREEK BADLANDS

use. Most soils are high in sodium and may contain gypsum. The highest potential for these soils is to produce native vegetation suitable for livestock grazing and wildlife habitat. Large areas of the WSA are barren and not capable of producing vegetation.

Erosion susceptibility classes within the WSA range from moderate to critical, indicating identified erosion problems.

WATER RESOURCES

The WSA contains one perennial stream, Red Creek, and numerous intermittent streams. The major tributary to Red Creek within the WSA is Beef Steer Creek, an ephemeral stream. There are no reservoirs within the WSA.

The WSA has highly erodible red shales and sandstones. The erodibility of the soils in the area is a major watershed concern, because it contributes a high amount of sediment to the Green River and eventually the Colorado River. The Rock Springs District Office is currently developing an ACEC management plan to reduce the sediment load in Red Creek and address other problems of the Red Creek watershed.

Red Creek Watershed ACEC

An Area of Critical Environmental Concern has been designated to protect the watershed in the Red Creek Basin and Scott Canyon (south of the WSA). The area has a very fragile watershed as the soils are highly erodible. This area also serves as crucial wildlife habitat. BLM's management recommendation is to prohibit or strictly control disturbing activities from December 15 to May 15 and during any other prolonged period of muddy conditions. In addition, all surface disturbing activities will be conducted in accordance with the Red Creek Watershed Management Plan, which is available for review in the Rock Springs District Office.

Specific erosion control measures include: (1) Construction of two gabions and a stream enclosure between the gabions to enhance vegetation recovery and channel stabilization; (2) maintenance of nine reservoirs to increase water holding and sediment holding capacities; (3) rehabilitation of approximately 35 miles of roads and trails which are causing erosion and water quality problems; (4) construction of two check

dams for sediment trapping; (5) construction of approximately 40 headcut control structures to arrest gully headcutting; and (6) closing all nondesignated roads and trails to vehicular travel through signing (barriers or gates may be used if signing proves ineffective).

In addition to the above projects, operations involving heavy equipment (trucking livestock, oil and gas exploration and development, etc.) would be restricted to county and BLM roads between November 1 and May 30 each year. Also, surface-disturbing activities (road construction, pipelines, etc.) would be limited to existing disturbed areas wherever possible.

VEGETATION

The most common vegetation types in the WSA are juniper and sagebrush. These two types intergrade frequently. The juniper, however, dominates the shallow soils and rock outcrop areas. Sagebrush communities are found in the sandy deeper soils of the area. Other common vegetation communities in the WSA are greasewood, Nuttall saltbush, and perennial forbs.

The juniper communities vary between widely spaced single trees with no understory, to a more tightly spaced community with a well-developed understory of sagebrush, rabbitbrush, frequently cushion plants, and grasses. These areas are often an intergradation of the juniper and sagebrush types. Juniper communities vary from 10-25 percent cover.

In the typical sagebrush community the grass and forb components are different (see District-wide Analysis, Chapter 2, Vegetation, for specific components). The ground cover estimates for sagebrush communities are quite variable, ranging from 40 to 70 percent.

The greasewood community inhabits the many washes and lowland areas of the WSA. Lowland soils with high concentrations of salt are dominated by greasewood and rubber rabbitbrush. Other soils will also support greasewood communities. Ground cover in greasewood communities varies from 30 to 60 percent.

Nuttall saltbush communities are found on dense alkaline upland soils. These communities will intergrade with the greasewood communities in the lowland sites. This community is typified by

RED CREEK BADLANDS

very little cover (20 to 40 percent) which is generally low growing.

The perennial forb communities are generally found on the harsher areas of the WSA, i.e., shallow soils, windswept knobs. The component plants will often change with small variations in the microclimates. Cover varies widely, but is generally around 20 to 30 percent.

Many areas of the WSA are classified as badlands and are mostly devoid of vegetation.

Fire Management

The WSA lies within the area designated as "limited suppression" in the Salt Wells Resource Area Fire Management Plan (November 1981). Most of the fires occurring in the WSA are attributed to lightning storms, and consist of single tree fires with limited potential for spreading. Larger fires normally result only when winds exceed 15 mph, allowing the fire to spread rapidly through the crowns of juniper and sagebrush. It is recommended in the fire management plan that there be immediate suppression of fires in this area when wind exceeds 30 mph. At wind speeds less than 30 mph, it is recommended that reported fires be monitored from the air and allowed to burn, unless private property is threatened or there is high potential for spread.

WILDLIFE

The Red Creek Badlands WSA has been identified as important winter range for pronghorn antelope and is crucial winter range for mule deer. The WSA also provides these species with habitat in the spring, summer, and fall seasons. Elk are year-round residents of the WSA. Small groups of elk can be found in scattered, more remote pockets of heavier timber and related vegetation. Pronghorn antelope are the dominant big game species in the lower elevations, with mule deer becoming more prevalent in the juniper badlands and steeper canyons. One of the key values to be protected through implementation of the Red Creek Watershed ACEC Management Plan is wildlife, particularly big game.

Other species present include the coyote, bobcat, golden eagle, red-tailed hawk, and numerous species of small and nongame animals. See the District-wide Analysis, Chapter 2, Wildlife, for further details. There are no known threatened or endangered species found in the WSA.

The habitat types occurring within the WSA include juniper; badlands; cliffs, butte tops, and outcrops; and mountain shrub and sagebrush steppe which is mixed with juniper. Some meadows are also found in the sagebrush steppe habitat. The predominant habitat type is a combination of the sagebrush steppe and juniper.

WILD HORSES

There are no wild horses herds in the WSA, although an occasional horse will sometimes drift into the area. Currently, there are no plans to include any part of the WSA in a wild horse herd management area.

LIVESTOCK GRAZING

The Red Creek Badlands WSA is within the Red Creek grazing allotment. All licensed use is by cattle and occurs during the summer grazing season (May 1 to November 1). Total licensed actual use for cattle within the Red Creek grazing allotment is 4,480 AUMs. This amounts to 1,311 cattle for the summer months. Of the total livestock use, 796 AUMs are allocated from the WSA. Cattle within the Red Creek Badlands WSA are known to concentrate in the Beef Steer Spring area. Due to the heavy concentration of use in this area, some resource damage has occurred. There are no existing range improvements to direct livestock movement, and none are planned within the WSA.

WILDERNESS INCLUDING RECREATION

The BLM inventoried the Red Creek Badlands area and all contiguous lands for wilderness characteristics as outlined in the BLM Wilderness Inventory Handbook (BLM 1978d). On the basis of the intensive inventory, the Bureau determined that the Red Creek Badlands WSA met the criteria established in Section 2(c) of the Wilderness Act of 1964. The findings of the wilderness inventory for each of the four mandatory wilderness characteristics may be summarized as follows:

Size

The WSA contains 8,020 acres of public land and 640 acres of state land. The original inventory unit contained 7,100 acres. However, after the

RED CREEK BADLANDS

public comment period, an additional 920 acres were added to the east end of the WSA.

Naturalness

The WSA is essentially natural in character. Close inspection reveals two old seismic lines, two two-track trails, and an abandoned road to an old well site. These intrusions are faded and are no longer considered noticeable.

Outstanding Opportunities (Recreation)

The rugged terrain and vegetative screening of the badlands provides numerous opportunities for solitude. When these two features are combined, a sense of remoteness and isolation is evident. Primitive recreation opportunities include hunting, hiking, and horse packing.

Recreation opportunities in the WSA include hiking, backpacking, horseback riding, rockhounding, wildlife observation, motorcycle riding, and hunting. However, the WSA's steep topography, unstable soils, and the lack of potable water limit recreation activities. The primary recreation activity in the WSA is hunting. Most of the off-road vehicle use in the WSA occurs in conjunction with hunting.

Supplemental Values

The Red Creek Badlands WSA has highly erodible red shales and sandstones. The coloration of the rocks and cliffs, mixed with the various shades of vegetation, provides an interesting landscape. The WSA also contains pinyon pine stands which are a rare occurrence, this far north.

CULTURAL RESOURCES

The Red Creek area has probably been intermittently occupied by nomadic Indian hunters and gatherers for the last 7,000 years. The prehistoric occupation was probably by small groups and only on a temporary basis. One major prehistoric campsite located a mile north of the WSA has been intensively investigated and has yielded a series of dates from 7,200 to 400 years ago. Test excavation of another small campsite one and a half miles northeast of the WSA, was dated 400 years before present. No prehistoric sites have been recorded

within the WSA, even though about 1.2 percent of the area has been inventoried at the Class III level. Within the Red Creek drainage, but outside the WSA, about 1,000 acres have received a Class III inventory. Six hundred acres of linear inventory yielded 11 sites, and 400 acres of block inventory yielded four sites. Since linear methods tend to locate more sites per unit area inventoried, extrapolation from these data tend to overestimate density. Probable site density outside the WSA is six to eight sites per section. Due to the extremely steep and dissected terrain within the WSA, site density will probably be significantly less.

Flat ridge tops adjacent to or covered by juniper woodland would be preferred site locations on the upland area, although sites in such situations are often damaged by erosion. Site density will probably be highest along Red Creek itself, but many of these sites will be eroded or buried, depending on the specific situation.

Even less is known of the historic cultural resources of the WSA. The original route of the mail stage between Browns Park and Green River City passed near to or possibly across the northwest corner of the WSA. Use of this wagon road was abandoned about the turn of the century, and subsequent erosion has obliterated most of the original trail in this area. Given the history of ranching within Red Creek, the primary type of historic site would probably be small scatters of refuse resulting from drovers or herders camps. No projections can be made concerning historic site density.

VISUAL RESOURCES

The Red Creek Badlands WSA is characterized by highly erodible shales and sandstones. Rim erosion of the Wasatch Formation has created colorful badlands which are high in red silt content and which contrast beautifully with the dominant juniper vegetation.

The WSA is classified as Visual Resource Management Class II. The basic management guidelines for this visual resource management class are described in detail in the District-wide Analysis, Chapter 2, Visual Resources.

NOISE

The noise level in the WSA is very low at pre-

RED CREEK BADLANDS

LAND USE CONSTRAINTS

SOCIOECONOMIC CONDITIONS

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

ASSUMPTIONS AND ASSESSMENT GUIDELINES

In addition to the assumptions and assessment guidelines outlined in the District-wide Analysis, Chapter 3, the following assumptions were used for impact analysis:

1. The oil and gas potential of this WSA is unknown. Approximately 50 percent of the WSA is pre-FLPMA leased and another 8 percent is state leased. Further exploration activity is anticipated and possibly minor development, due to some industry interest in the area.
2. Although the Red Creek Badlands WSA lies within an area of oil shale occurrence, it is assumed that development of this resource will not occur, due to its low development potential.

IMPACTS OF THE PROPOSED ACTION (NONWILDERNESS OR NO ACTION)

Air Quality

Under the proposed action minor adverse impacts would occur to air quality. The air quality within the Red Creek area probably would not change much from the present situation. If increased oil and gas exploration and development occurs in the WSA, the air quality could decrease slightly within its current class (Class II). Exploration, development, production, abandonment, and rehabilitation all produce dust and gaseous emissions from vehicles and equipment. Development and production can also produce noxious and even toxic gaseous emissions from the production or processing of the commercial hydrocarbons.

Topography

No impacts to topography are expected, due to protections provided by the Red Creek Watershed ACEC Management Plan.

Soils

Under the proposed action highly beneficial impacts would occur to soils. Implementation of the Red Creek Watershed ACEC Management Plan (see Chapter 2, Water Resources) would benefit soils. Currently, the Red Creek watershed area is experiencing extensive soil loss through erosion, caused primarily by man's activities and natural processes (geologic erosion). The Red Creek watershed has been designated as an Area of Critical Environmental Concern (ACEC), primarily to reduce the soil loss and sediment loading of Red Creek. With improved livestock management and appropriate mitigation of oil and gas exploration and development, soil erosion would decrease over the long term. Areas along drainages, where livestock congregate, would develop more vegetative cover with periodic rest. Soil compaction would be reduced over time, thereby increasing soil moisture. As infiltration rates increase, surface runoff will decrease, reducing base soil erosion rates.

Water Resources

Under the proposed action highly beneficial impacts would occur to water resources. Implementation of the ACEC management prescriptions would reduce soil erosion and runoff. With the decrease in soil erosion and runoff, water quality would improve. Control structures proposed by the ACEC management plan should stabilize drainages, and result in a corresponding improvement in water quality by decreasing sediment load. The proposed closing of unnecessary roads would also improve water quality. Revegetation of old two-track trails, which is occurring naturally, would reduce the gully effect common on unsurfaced and poorly located roads.

Surface disturbing activities (e.g., oil and gas activities) would adversely affect small intermittent

RED CREEK BADLANDS

streams. However, most of the potential impacts would be mitigated through application of site-specific mitigation requirements.

Vegetation

Under the proposed action moderately beneficial impacts would occur to vegetation. Impacts to vegetation would decrease over the long term, with implementation of the Red Creek Watershed ACEC Management Plan. With improved livestock grazing management, forage production would increase. Implementation of pest control measures could also increase the amount of vegetation. (The Red Creek area has a potential problem with Mormon crickets, which could consume a large amount of forage that is otherwise available to livestock and wildlife.)

Under the proposed action disturbance of vegetation would decrease. Motor vehicles would be restricted to designated roads and trails, and some road closures would also occur, reducing vegetation disturbance. However, oil and gas activities would continue to cause some disturbance of vegetation.

Wildlife

Under the proposed action minor adverse impacts would occur to wildlife. With the implementation of the Red Creek Watershed ACEC Management Plan, forage production is expected to increase, as a result of better grazing management. Riparian habitat would also improve, due to better grazing management. However, wildlife numbers would not increase, and may even decrease slightly, due to other factors, primarily oil and gas activities. Anticipated oil and gas activities would cause some loss of habitat. The major impact would be the displacement of wildlife from their natural use areas.

Livestock Grazing

Under the proposed action minor beneficial impacts would occur to livestock grazing. There will be no change in the amount or type of livestock use from the present unless range monitoring studies showed an increase or decrease of forage available to livestock. New access roads would be built as a result of oil and gas activities, and could improve access for livestock management. However, vehicle access by ranchers would be limited to designated roads and trails, as outlined

in the Salt Wells ORV Implementation Plan. A beneficial impact may occur to livestock grazing, if new water sources are developed during oil and gas drilling.

Presently one new range improvement is planned within the WSA. This improvement is a short boundary fence located in sections 23 and 24, T. 14 N., R. 103 W. Livestock facilities, such as fences and reservoirs, will continue to be maintained by conventional means, and new facilities would be authorized. Improved livestock management may result in an increase in available forage. However, disturbance associated with oil and gas activities may offset some of the benefits of increased forage.

Wilderness Including Recreation

Wilderness Values

Under the proposed action minor adverse impacts would occur to wilderness values. Some of the wilderness characteristics unique to the Red Creek area would remain intact, more so than might be expected. The implementation of the Red Creek Watershed ACEC Management Plan would help to protect some of these qualities, but some adverse impacts would occur to wilderness values, due to oil and gas exploration and development.

Implementation of the proposed action would result in the loss of the opportunity to establish this WSA as wilderness. However, the WSA's overall ecological uniqueness and contribution to the regional diversity of the wilderness system is somewhat limited.

Recreation Opportunities

Under the proposed action minor adverse impacts would occur to recreation opportunities. Motor vehicle use would be limited to designated roads and trails. Vehicle restrictions, as well as the slight decrease in wildlife populations could cause a slight decrease in vehicle-dependent recreation use, particularly hunting.

Other limited recreation uses, such as hiking, horseback riding, rockhounding, and wildlife observation are expected to decrease slightly from the present levels, due to anticipated oil and gas disturbance.

RED CREEK BADLANDS

Cultural Resources

Under the proposed action no impacts would occur to cultural resources. Anticipated oil and gas exploration and development activities could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction. There could be limited amounts of disturbance to cultural sites caused by geophysical exploration, transportation of equipment, and surveying of locations and rights-of-way. Illegal collection of artifacts and vandalism of structures by individuals would continue in areas of oil and gas activities.

Visual Resources

Under the proposed action no impacts would occur to visual resources. The WSA would continue to be managed under VRM Class II objectives. No impacts from anticipated oil and gas exploration activities would be sufficient to alter this rating or adversely impact the visual values.

Noise

Noise would increase slightly if oil and gas exploration and development increases in the WSA, having a minor adverse impact. U.S. Air Force low-level bomber training flights would continue sporadically over the WSA. Occasional and brief periods occur when loud noises can be heard from these flights.

Land Use Constraints

The proposed action would not conflict with county zoning, and there would not be any conflict with the management of state or private lands. The area would remain as an agricultural zone, with the possibility of increased development related to oil and gas production.

Socioeconomic Conditions

Quantitative resource data was not available on a site-specific basis to analyze the specific socioeconomic impacts of wilderness or non-wilderness management of this WSA. A general discussion of impacts and opportunities for resource development under wilderness or non-

wilderness management of a WSA is presented in the District-wide Analysis. The socioeconomic impacts analyzed in the District-wide Analysis for the proposed action and alternatives is a composite of the general trend in resource use for all the WSAs.

The level of livestock grazing in the WSA is not expected to change as a result of the proposed action. Therefore, receipts from livestock production are not expected to be affected by the proposed action. There would be a minor decrease in the number of visitor-days expected in the WSA, due to a decrease in hunter use, hiking, horseback riding, etc. However, expenditures for recreation use of the WSA are not expected to change.

Oil and gas exploration and development would be allowed throughout the WSA, subject to restrictions on development in accordance with the ACEC management plan. Exploration and development activities would be expected to increase employment, income, revenues, and taxes in the region.

IMPACTS OF THE ALTERNATIVE ACTION (WILDERNESS DESIGNATION)

Air Quality

Under wilderness management no impacts would occur to air quality. Pollution levels are currently low and there would be little, if any, activity in the area significant enough to cause air quality to deteriorate.

Topography

Under wilderness management no impacts to topography are anticipated. Allowed oil and gas activities on pre-FLPMA or state leases would be mitigated to reduce or eliminate any long-term topographical modifications.

Soils

Under wilderness management moderately beneficial impacts would occur to soils. Wilderness management would help to protect the soil from surface disturbing activities. However, under wilderness management some potential for im-

RED CREEK BADLANDS

proved livestock management would be foregone, and construction type improvements would be limited. The improved management and construction of improvements would have had a beneficial impact on soils.

Surface disturbance of soils would decrease, as a result of elimination of motor vehicle use. Allowed oil and gas exploration on pre-FLPMA leases or state mineral development would lessen the beneficial impact.

Water Resources

Under wilderness management highly beneficial impacts would occur to water resources. Under wilderness management the Red Creek Watershed ACEC Management Plan would still be implemented. Most of the improvements, as designated in the plan, would require motorized equipment for installation and maintenance. However, the major improvements would be installed outside of the WSA. Implementation of this ACEC management plan would decrease soil erosion and increase water quality.

Vegetation

Under wilderness management minor beneficial impacts would occur to vegetation. Destruction of vegetation would decrease, as a result of elimination of motor vehicle use. However, allowed oil and gas activities on pre-FLPMA and state leases could cause some vegetation loss, especially in the short term.

Wildlife

Under wilderness management minor adverse impacts would occur to wildlife. The elimination of motor vehicles in the WSA would be beneficial to wildlife. However, allowed oil and gas activities on pre-FLPMA and state leases would continue to disturb wildlife. In the short term, wildlife numbers would remain approximately the same, due to habitat limitations.

Livestock Grazing

Under wilderness management no impacts would occur to livestock grazing. Livestock use of wilderness areas is specifically permitted in the 1964 Wilderness Act. The amount or type of livestock use would not change from the present

situation unless range monitoring studies showed an increase or decrease of forage available to livestock.

There could be some loss of efficiency for livestock management, in that motorized vehicles would be excluded from the area if designated wilderness. Motor vehicles and motorized equipment could be permitted in emergencies or if BLM managers determined that other alternatives (such as horseback) do not exist and wilderness values would not be impaired.

If the WSA is designated wilderness, it is anticipated that the number of range improvements that could be implemented would decrease slightly. Future range improvements could only be constructed for resource protection and effective management of natural resources and wilderness values, rather than to accommodate increased numbers of livestock. A new boundary fence is planned within the WSA, near the eastern boundary. However, it would not impair the wilderness values and would be permitted.

Wilderness Including Recreation

Wilderness Values

Under wilderness management the wilderness characteristics unique to the WSA would essentially remain the same. Designation of the WSA as wilderness would increase the diversity of the National Wilderness Preservation System.

Recreation Opportunities

Under wilderness management minor adverse impacts would occur to recreation opportunities. Motor vehicle use would be eliminated within the WSA. This vehicle restriction could cause a slight decrease in vehicle-dependent recreation use, particularly hunting.

Other limited recreation uses such as hiking, horseback riding, rockhounding, and wildlife observation are expected to remain at the same levels. Wilderness designation may initially draw a few more people to the area, due to the increased publicity associated with wilderness designation. However, these type of uses would probably return to their former levels, due to the limited water supplies in the WSA.

RED CREEK BADLANDS

Cultural Resources

Under wilderness management no impacts would occur to cultural resources. Allowed oil and gas activities on pre-FLPMA and state leases could cause an increase in the number of cultural sites disturbed. However, such activities are subject to Section 106 compliance of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations*, Part 800), and mitigation of adverse effects is required prior to construction.

Visual Resources

Under wilderness management moderately beneficial impacts would occur to visual resources. The VRM class would be upgraded to VRM Class I by BLM and would be managed as such.

Noise

Under wilderness management no increase in noise levels is anticipated. With motor vehicles eliminated in the WSA and minimal oil and gas exploration and development anticipated, noise levels would be low. If the WSA is designated wilderness, BLM would initiate negotiations with the U.S. Air Force, to alter the route of their low-level training flights.

Land Use Constraints

Wilderness designation would not conflict with county zoning, but it would conflict with the management of the state lands within and adjoining the WSA. The area would remain an agricultural zone. No developments (factories, plants, etc.) would be permitted in the WSA, unless associated with pre-FLPMA or state lease development. Most rights-of-way for roads, pipelines, etc. would not be allowed unless wilderness values were unimpaired. These rights-of-way would have to be considered on a case-by-case basis.

Socioeconomic Conditions

Under wilderness management no changes in

proprietors income would accrue to the livestock industry or the recreation industry. There would be a minor decrease in the number of visitor-days expected in the WSA, due to a decrease in vehicle-dependent recreation use, such as hunting. However, expenditures for recreational use of the WSA are not expected to change.

Under wilderness management onsite oil and gas activities would be allowed on approximately 58 percent of the WSA. Offsite drilling may be required to develop oil and gas resources on post-FLPMA leases. No changes in employment, income, revenues, and taxes are anticipated as a result of wilderness management of this WSA.

SUMMARY OF IMPACTS

Site-specific impacts for the Red Creek Badlands WSA are summarized as follows: Implementation of the proposed action would result in negligible impacts to the present natural resource base. Minor beneficial impacts would occur to the present natural resource base under wilderness management. The difference is primarily due to more protective restrictions under wilderness management, particularly the elimination of motor vehicle use.

Under the proposed action minor adverse impacts would occur to wilderness values. Wilderness management would not affect the wilderness values of the WSA. Under the proposed action and the wilderness alternative, minor adverse impacts would occur to recreation opportunities. The adverse impact occurring under the proposed action would be due to a decrease in hunter use. Wilderness designation would cause minor adverse impacts, due to the elimination of vehicle-dependent recreation activities.

Under the proposed action minor beneficial impacts would occur to present socioeconomic conditions and the oil and gas industry. Wilderness management would have a negligible impact on socioeconomic conditions and the oil and gas industry. Beneficial impacts occur under the proposed action because mineral development could occur in the entire WSA.

APPENDIX A

COORDINATION WITH THE STATE OF WYOMING

The coordination meetings between BLM and the State of Wyoming were held in February and April of 1982. At these meetings key issues were discussed with regard to possible wilderness management and impact assessment, such as

state ownership of lands in wilderness areas, air quality policies, and water quality policies. The letters in this appendix document the State of Wyoming positions discussed in these two meetings.

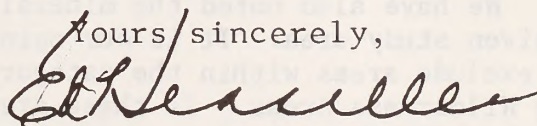
Mr. Max Lieurance
April 13, 1982
Page 2

public schools and other institutions, and that it secure the maximum income which can reasonably be realized. The opinion of the Supreme Court of the United States in Tassen vs. Arizona leaves no room for doubt or argument on this point. A recent court case in Oklahoma defining that state's school land trust obligation reaches the same conclusion. These court decisions underscore our concern over the inclusion of state lands in BLM wilderness study areas.

We believe that the state has no option but to secure the greatest economic return reasonably possible from the use and management of these lands. The federal government may not unilaterally take action which prevents the state from doing so. I cannot envision a situation in which wilderness management of state lands would meet the state's trust obligation. Therefore, I request that the BLM initiate and diligently pursue state/federal land exchange opportunities for those wilderness study areas which contain state lands. Exchange actions should be initiated wherever a state ownership interest occurs, be it surface estate, mineral estate or both. State land sections immediately adjacent to wilderness study areas should also be examined for exchange if wilderness designation would adversely impact their use or management.

Due to our overriding trust obligation, the state cannot be expected to support a wilderness recommendation for an area which incorporates state lands or adversely impacts adjacent state lands. The successful exchange of these lands, in a manner which fully protects the interests of the state, should occur prior to the finalization of the BLM wilderness recommendations. Please keep me informed of the progress in this effort.

Yours/sincerely,



EH:pcl
cc: Mr. Oscar Swan

MAY 12 1982

GARY B. GLASS
DIRECTOR AND
STATE GEOLOGIST



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May 10, 1982

Mr. Dick Hartman
State Planning Coordinator
2320 Capitol Avenue
Cheyenne, Wyoming 82002

Dear Dick:

We have reevaluated the potential for commercial mineralization within each of the Bureau of Land Management's proposed Wilderness Study Areas. Each of the areas has been listed in one of three categories: High Mineral Potential, Moderate Mineral Potential, and Low Mineral Potential. Study areas which fall into the High Mineral Potential category most probably contain commercially valuable mineral deposits. Study areas in the category of Moderate Mineral Potential may contain commercial mineral deposits and usually require more investigation before their true potential is known. Study areas in the Low Mineral Potential Category probably do not contain commercial mineral deposits, but occasionally these areas may require more investigation before their true potential is known.

The tabulations by category and study area are attached. If you wish, we can summarize our reasoning for assigning a study area to a certain category. Because of time constraints, we have not included those summaries at this time. When a study area is preceded by an asterisk, we have upgraded our original appraisal of some years ago, i.e., we now have new data that makes us think there is a greater likelihood of finding commercial mineral deposits in that area.

We have also noted the mineral deposits that most likely occur in any given study area. It is our opinion that every effort should be made to exclude areas within the category of High Mineral Potential from becoming Wilderness Areas. If these areas are made Wilderness, the State will not benefit from development of the commercial mineral deposits that very probably occur within those areas. We make this recommendation fully aware that there are other values than minerals, but we want to stress that the High Mineral Potential areas are extremely valuable. We hope that other lands could be substituted for these valuable areas.

This will not terminate our appraisal of Wilderness Lands. We plan to respond to environmental statements as BLM releases them. We will

Mr. Dick Hartman

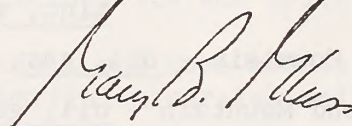
May 10, 1982

Page 2

also respond to any State requests for assistance in evaluating future study areas.

If you have any questions about this appraisal, please don't hesitate to contact us.

Sincerely,



Gary B. Glass
State Geologist

GBG:sa

Geology--Interpreting the past to provide for the future

WILDERNESS STUDY AREAS WITH HIGH MINERAL POTENTIAL

- 010-126 Bobcat Draw Badlands - oil and gas
 - 010-130 Sheep Mountain - oil and gas
 - 010-131 Red Butte - oil and gas
 - 010-222 Cedar Mountain - oil, gas, and coal
 - 010-335 McCullough Peak - oil and gas
 - * 030-101 Sweetwater Canyon - tungsten and gold
 - * 030-301 Encampment River Canyon - Base and precious metals
 - 040-408 Adobe Town - oil, gas, and coal
 - 030-407 Ferris Mountains - Copper, tungsten, gold, silver, cobalt, lead, zinc, and industrial minerals
 - ** 040-110 Lake Mountain - oil, gas, copper, silver, and zinc.
 - 040-221 Raymond Mountain - oil, gas, copper, silver, and zinc
 - 040-223 Coal Creek - oil, gas, copper, silver, zinc, and lead
 - 040-306 Buffalo Hump - oil and gas
 - 040-307 Sand Dunes - oil, gas, and coal
 - ** 040-311 Alkali Draw - oil, gas, and coal
 - ** 040-313 South Pinnacles - oil, gas, and coal
 - 040-316 Alkali Basin - oil, gas, and coal
 - 040-317 East Sand Dunes - oil, gas, and coal
 - 040-318 Red Lake - oil, gas, and coal
 - 040-323 Honeycomb Buttes - oil and gas
 - 040-324 Oregon Buttes - oil and gas
 - 040-325 Whitehorse Creek - oil, gas, and gold
 - * 040-401 Devils Playground - Trona, trona-halite, and uraniferous phosphate, oil and gas
 - * 040-402 Twin Buttes - Trona, trona-halite, uraniferous phosphate, oil and gas
 - 040-406 Red Creek Badlands - oil and gas
 - 060-204 Fortification Creek - oil, gas, and coal
-

* Increased estimate of mineral potential

** Very high potential for oil and gas

Underlined minerals have high potential, others have moderate potential

WILDERNESS STUDY AREAS WITH MODERATE MINERAL POTENTIAL

- 010-104a, b, and c Owl Creek - gold and other metals
- 010-221 Honeycombs - oil and gas
- 010-242 Trappers Creek - oil and gas
- 030-110 Whiskey Mountain - oil and gas
- 030-111 Copper Mountain - gold and other metals
- 030-120, 122 and 123 Sweetwater Rocks - precious and base metals, ferrous,
ferroalloy, and industrial minerals
- 030-303 Prospect Mountain - Rare earth elements and uranium
- 030-304 East Seminoe Mountains - precious and base metals, ferrous, ferroalloy,
industrial minerals, and strategic minerals
- 030-305 Pedro Mountains - Uranium, molybdenum, graphite, and lead

Wyoming Geological Survey
May 10, 1982

WILDERNESS STUDY AREAS WITH LOW MINERAL POTENTIAL

010-236 South Paint Rock
010-239 Paint Rock
010-240 Medicine Lodge
010-241 Alkali Creek
030-109 Dubois Badlands
040-106 East Fork
040-335 Mill Creek
060-201 Gardner Mountain
060-202 North Fork Powder River

Wyoming Geological Survey
May 10, 1982

THE STATE



OF WYOMING

ED HERSCHLER
GOVERNOR

Department of Environmental Quality

LAND QUALITY DIVISION

401 WEST 19TH STREET

TELEPHONE 307-777-7756

CHEYENNE, WYOMING 82002

MEMORANDUM

TO: Dick Hartman, State Planning Coordinator

FROM: Robert Dorn, DEQ *RD*

DATE: April 26, 1982

SUBJECT: BLM Wilderness Inventory

Attached are revised comments from our department on BLM wilderness inventory units. Actually, there are no new comments but rather elimination of some previous comments. I have also attached the earlier comments from our Air Quality and Water Quality divisions which are still applicable.

RD:rjc

Attachments

WY - 010 - 222

This area is just northeast of the Vulcan Acid Terminal at Kirby and is near the Wyo-Ben Lucerne Bentonite Plant. The effects of these operations on air quality might be noticeable within the area.

WY - 030 - 301 Encampment River

The Encampment River is a Class I stream. Water Quality recommends wilderness to protect and help enforce this designation.

WY - 030 - 304 Bennett Mountain

The south slope is within sight of the coal mines near Hanna. Solitude would not be present in this portion of the area.

WY - 040 - 406 Red Creek Basin

Red Creek is a Class I stream. Water Quality recommends wilderness to protect and help enforce the designation.

THE STATE



OF WYOMING

ED HERSCHLER
GOVERNOR

Department of Environmental Quality
Water Quality Division

HATHAWAY BUILDING

CHEYENNE, WYOMING 82002

TELEPHONE 307 777-778

M E M O R A N D U M

TO: Robert Sundin
Director

FROM: John Bauer *JB*
208 Planning Coordinator

DATE: April 30, 1979

SUBJECT: BLM Wilderness Inventory

I have reviewed the April 9, 1979 memo and attachment concerning the BLM Wilderness Inventory and would like to offer the following comments.

The DEQ Water Quality Rules and Regulations, Chapter I, states that all surface waters located within the boundaries of Congressionally designated Wilderness Areas are designated Class I waters.

A Class I water designation denotes the prohibition of any new point-source discharges and prevents increases in pollutant loadings from existing discharges. Waters within designated BLM Wilderness lands would be subject to the Class I waters designation.

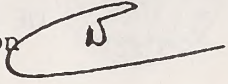
From our records there does not appear to be any permitted discharges on proposed wilderness lands. Mineral exploration and development now occurs on BLM lands and point-source discharges are evident. I assume that BLM Wilderness lands would not allow mineral exploration or other types of development. Thus, no new point-source discharges would occur.

^{RS RS R}
Inventory units 103, 410 & 301 are in drainages of waters now designated as Class I. Wilderness designation of these three inventory units would contribute in protection the existing quality of the Class I waters. There, fore, I recommend that unites 103, 410 and 301 be designated as Wilderness areas.



M E M O R A N D U M

TO: Robert E. Sundin, Director, Department of Environmental Quality

FROM: Randolph Wood, Administrator, Air Quality Division 

DATE: May 1, 1979

SUBJECT: BLM Wilderness Inventory

We have reviewed the BLM Wilderness Inventory with the purpose of identifying any nominated areas which might be impacted by new developments. From an Air Quality standpoint, existing sources or developments would have no bearing on future designations of Wilderness Areas.

In general, it is almost impossible to say that future developments might be permitted or precluded based upon resulting Air Quality impacts on future Wilderness Areas. Such is the case because impacts are strongly dependent upon the emission characteristics and parameters from the source, the meteorological situation and the spatial relationship of the source with the Wilderness Area.

Therefore, we can only state that identified possible future developments may impact candidate Wilderness Areas.

I have attached individual memos from the District Engineers with their specific comments.

Should you have any questions, please contact me or the engineer.



MAY 13 1982

THE STATE OF WYOMING



Commissioner of Public Lands and Farm Loans

2424 PIONEER AVENUE
PIONEER BUILDING-

CHEYENNE, WYOMING 82002

April 30, 1982

PLEASE ADDRESS REPLY
TO THE COMMISSIONER

MEMO TO: Dick Hartman, State Planning Coordinator

FROM: Carl E. Johnson, State Forester

RE: BLM Wilderness Study Areas

In response to the meeting held with the BLM April 21st at their office, the following is offered:

The Governor's letter to Dan Baker dated May 29, 1979 seems to be current in most areas of concern, but circumstances may have changed in some resource areas and perhaps need more emphasis.

The emphasis on water as one of our most important resources should continue to be called to the attention of all land management agencies. Any E.I.S. or E.A. should carefully evaluate all aspects of water whether it be for impoundment, conveyance, diversions, control of water to prevent adding salts to streams, or vegetative management ~~for~~ water production on the watershed.

It has only been since 1980 that the potential for vegetative manipulation to increase water yield has started to be considered in land management practices although research has been conducted over the last 50 years. In addition there has been considerable work conducted on blowing snow management with beneficial results. Any area that has the potential to increase water yield from application of vegetative or blowing snow management techniques should not be placed under restrictions that would prevent application of these practices.

Another concern is that some of the study areas have soils that are highly erosive or contribute to the salting of streams. Such potential should be addressed in the study to determine whether preventive measures can be instituted on areas set aside for wilderness.

I would also call attention to those small areas that were only designated because they are adjacent to the U. S. Forest Service RARE II areas. Since Wilderness Legislation has been written, it would seem appropriate that those small areas that are not adjacent to Forest Service areas be dropped from further study.

A recent poll conducted by Congressman Cheney concerning wilderness designation and resource exploration and development is of interest concerning Wyoming citizens attitude.

APPENDIX B

WILDERNESS AVAILABILITY

The following areas provide wilderness recreation within the wilderness use region:

NATIONAL FORESTS

Wasatch National Forest

This forest is located along the Wasatch Front in Utah. Part of one designated wilderness area (Lone Peak) and part of the High Uintas Primitive Area are in this forest. Both areas have mountainous terrain and their ecoregion classification is Rocky Mountain Forest Province.

The Lone Peak Wilderness Area is a small area (30,088 acres) and receives 55,000 visitor-days (see Glossary) use annually. Visitor use levels are not a problem yet; the average length of stay is one day.

Ashley National Forest

This forest is located primarily along the Uinta Mountain Range in extreme northeastern Utah and southwestern Wyoming. The major part of the High Uintas Primitive Area (76,901 acres) is in this forest, which is classified into two ecoregions; Rocky Mountain Forest Province and Wyoming Basin Province.

The Uinta Mountain portion, including the High Uintas Primitive Area, is classified as Rocky Mountain Forest Province. Visitor use in this part of the forest is primarily from the Wasatch Front population area. There are some localized areas of overuse, but generally the visitor use is still within acceptable limits. The average length of stay is three to four days.

The Flaming Gorge National Recreation Area is within the Ashley National Forest. The majority of the recreation area falls within the Wyoming Basin Province ecoregion. The recreation area generally surrounds the Flaming Gorge Dam and Reservoir; a major feature of the upper Colorado River Storage Project located on the Green River. The recreation area is primarily managed for recreation including boating, camping, hunting, fishing, sightseeing, etc. None of the recreation area is managed for wilderness. Visitor use in the recreation area is both local and from the Wasatch Front

population area. In 1981 the recreation area received 985,000 visitor-days use. The recreation area's capacity is 2.9 million visitor-days, although additional facilities would be required to accommodate increased use.

Uinta National Forest

This forest is located in north-central Utah just south of the Wasatch Forest. Part of the Lone Peak Wilderness Area is within this forest. Visitor use on this portion of the Lone Peak Wilderness Area is longer than in the Wasatch portion; the average length of stay is three days. There are no problems with overuse at present, but this area has only been designated wilderness since 1978. The ecoregion classification is Rocky Mountain Forest Province.

Targhee National Forest

This forest is located in eastern Idaho and western Wyoming. There are no designated wilderness areas or primitive areas in the forest. The west slope of the Tetons is part of this forest and it experiences some overuse. The ecoregion classification is Rocky Mountain Forest Province.

Caribou National Forest

This forest is located in eastern Idaho. There are no designated wilderness or primitive areas in the forest. Visitor use is low and the length of stay is usually one day. The ecoregion classification is Rocky Mountain Forest Province.

Routt National Forest

This forest is located in northern Colorado, adjacent to the Wyoming state line. The forest has four designated wilderness areas—Mount Zirkel, Flat Tops, Never Summer, and Eagles Nest (total acres 524,217). There are no designated primitive areas within this forest. Visitor use is generally within acceptable limits, except around some lakes where overuse is occurring. The average length of stay is about four days. The ecoregion classification is Rocky Mountain Forest Province.

Roosevelt National Forest

This forest is located in northern Colorado east of Routt National Forest and west of Fort Collins, Colorado. There are five designated wilderness areas—Rawah, Neota, Comanche Peak, Cache Lapoudre, and Indian Peaks with a combined acreage of 233,194. Visitor use is substantial in these areas, due to their relatively close proximity to the Colorado Front Range population centers, such as Denver and Boulder. Two of these wilderness areas, Rawah and Indian Peaks, receive heavy visitor use. The Indian Peaks area has some problems with overuse and has required special management by the Forest Service. The ecoregion classification for the five wilderness areas is Rocky Mountain Forest Province.

Big Horn National Forest

This forest is located in northern Wyoming, just west of Interstate 25 and adjacent to the Montana state line. There are no designated wilderness areas in the forest, however, there is one large primitive area, Cloud Peak (155,544 acres) which receives fairly heavy visitor use. About half of the 60,000 annual visitor-days use is by parties on horseback. The average length of stay is two days. The ecoregion classification is Rocky Mountain Forest Province.

Medicine Bow National Forest

This forest is located in southern Wyoming, immediately north of the Routt Forest. The forest has one small wilderness area (Savage Run—15,260 acres), which was designated in 1978. Visitor use is low and is primarily associated with big game hunting in the fall. The ecoregion classification is Rocky Mountain Forest Province.

Shoshone National Forest

This forest is located in northwestern Wyoming, adjacent to Yellowstone National Park and Bridger-Teton National Forest. There are three designated wilderness areas (Fitzpatrick, Washakie, North Absaroka) and one primitive area (Popo Agie) with a combined acreage of 1,334,693. Visitor use is relatively low, when compared to other wilderness areas in the wilderness use region. Total visitation in 1981 was 163,000 visitor-days. The Popo Agie Primitive Area receives the most concentrated use, but not to a detrimental level yet. The ecoregion classification is Rocky Mountain Forest Province.

Bridger-Teton National Forest

This forest, a combination of the Bridger and Teton forests, is located on the Wind River, Teton, and Wyoming mountain ranges in west-central Wyoming. Two wilderness areas (Bridger and Teton—combined acreage 949,481) are located in this forest, and the ecoregion classification is Rocky Mountain Forest Province. The Teton Wilderness Area is similar to the adjacent Fitzpatrick and Washakie wilderness areas on the Shoshone forest. Visitor use is low to moderate except for limited areas. The wilderness area receives approximately 100,000 visitor-days use, about one-third of which includes the use of horses. The Bridger Wilderness Area receives approximately 190,000 visitor-days use and is heavily impacted in seven areas. The average length of stay is about five days, due to the vastness of the areas and the time required to travel by foot or horseback.

NATIONAL PARKS

Yellowstone National Park

This park is located in the northwest corner of Wyoming. Most of the park is administered as wilderness, although it is not designated as such. The park is located on the Yellowstone Plateau which is a geothermal area of worldwide importance. The park has some localized areas of overuse, but generally, the backcountry does not receive excessive use. The average length of stay is two days. The ecoregion classification is Rocky Mountain Forest Province.

Grand Teton National Park

This park is located in northwest Wyoming immediately south of Yellowstone Park and is primarily situated along the Teton Range. A large portion of the park is administered as wilderness, although it is not designated as such. The park is presently being used at capacity. A quota system has been established by drainage to prevent overuse of the backcountry. The ecoregion classification is Rocky Mountain Forest Province.

Rocky Mountain National Park

This park is located in north-central Colorado. Most of the park is administratively endorsed as wilderness. It receives heavy use, and in some areas, overuse, largely due to its close proximity to the Colorado Front Range population centers, such as Denver and Boulder. The ecoregion classification is Rocky Mountain Forest Province.

NATIONAL MONUMENTS

Dinosaur National Monument

Dinosaur National Monument is located in northwestern Colorado (245,208 acres), with part of the monument extending into Utah along the Green River. The primary use of the backcountry in the monument is associated with whitewater rafting on the Green River. Ninety percent of the monument is administratively endorsed for wilderness use and is managed as such, even though it is not officially designated as wilderness. Visitor use is controlled by permit and is at capacity. Very little hiking or backpacking use occurs within the monument boundaries. The ecoregion classification is Rocky Mountain Forest Province.

Fossil Butte National Monument

This small monument (8,188 acres) is located in southwestern Wyoming near Kemmerer. The

monument was established in 1974 to protect some unique fossil fish beds. Administration of the monument is directed to protection and interpretation of the fossil fish. None of the monument area is managed for backcountry-type recreation use.

NATIONAL WILDLIFE REFUGES

There are numerous small national wildlife refuges within the wilderness use region including Seedskadee in southwestern Wyoming; National Elk Refuge in west-central Wyoming; Pathfinder in east-central Wyoming; Bamforth and Hutton Lake in southeastern Wyoming; Arapaho in north-central Colorado; Browns Park in the northwest corner of Colorado; and Ouray and Bear River Migratory Bird Refuge in northeastern Utah. None of these refuge areas provide any opportunity for wilderness recreation.

PLANTING IN GARDENS

General Principles

The first principle in planting is to choose the right plants for the right place. This means considering the soil, the climate, and the amount of light and water the plants will receive. For example, if you are planting in a sunny, well-drained area, you should choose plants that like these conditions. If you are planting in a shady, moist area, you should choose plants that like these conditions.

From Plants to Garden

When you are planning your garden, it is important to think about the overall design. This includes the layout of the garden, the choice of plants, and the way the plants will be arranged. You should also think about the maintenance of the garden, such as watering, weeding, and pruning.

It is also important to think about the time of year when you are planting. Some plants are best planted in the spring, while others are best planted in the fall. You should also think about the weather conditions when you are planting, as this can affect the success of your garden.

Planting in the Garden

When you are planting in the garden, it is important to follow some basic rules. First, you should dig a hole that is deep enough to hold the plant's roots. Second, you should place the plant in the hole so that its roots are spread out. Third, you should fill the hole with soil and firm it around the plant. Finally, you should water the plant thoroughly.

It is also important to think about the spacing of the plants in the garden. You should leave enough space between the plants so that they have room to grow. You should also think about the height of the plants, as this can affect the way they look in the garden.

Planting in the Garden

When you are planting in the garden, it is important to think about the overall design. This includes the layout of the garden, the choice of plants, and the way the plants will be arranged. You should also think about the maintenance of the garden, such as watering, weeding, and pruning.

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APPENDIX C

ECONOMIC ANALYSIS OF WILDERNESS DECISIONS

PROCEDURE

A complete economic analysis of a WSA would include an assessment of the change in all resource values that would be affected by wilderness management. In addition to financial values derived from the sale and use of natural resources, other economic values (benefits) are often present; but these values cannot be measured through market transactions. As an example, consumers derive satisfaction from certain recreation activities for which they are not required to pay a user fee. An individual may receive satisfaction from backpacking on public lands where no fee is charged for this opportunity. This brings about the concept of using consumer surplus as a measure of the economic value consumers are receiving from recreational use of public lands.

Figure C-1 shows a hypothetical demand (line AD) and supply (line BE) curve, with quantity BQ being consumed at price P. Total benefits or consumers willingness to pay would be represented by the area ACQB; which includes actual expenditures PCQB and consumer surplus represented by area ACP. Consumer surplus can be defined as the amount of money the consumer would have been willing to pay for a specific good, but did not have to. Consumer surplus is equivalent to net willingness to pay, and it will be used in this analysis as the gross benefits received from recreation. In the case of recreation, actual expenditures include the cost of traveling to the recreation site, which is a financial value to the region. Net benefits from recreation would be equal to the net willingness to pay, less the costs of managing the recreation site.

Benefits are also derived from other resource uses on public lands in addition to recreation. These benefits are usually received in a monetary form rather than just providing satisfaction through use. Profits would seem to be the most logical measure of net benefits received from mineral resource extraction, timber harvesting, and grazing use of public lands. Profits make up a portion of producer surplus, and it would seem reasonable to compare benefits from consumer

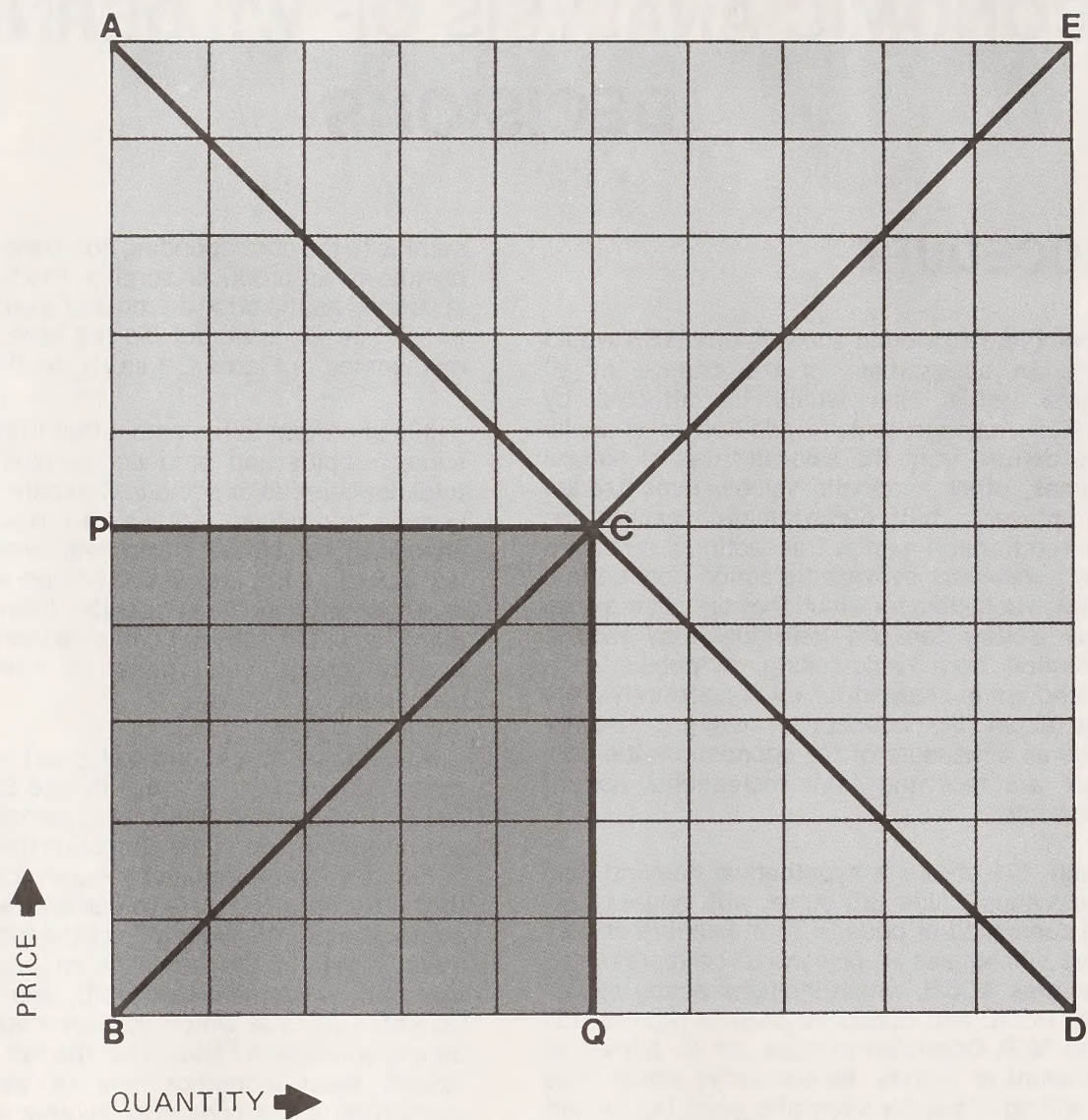
surplus to the corresponding component from supply known as producer surplus. Producer surplus is defined as the price a producer would be willing to sell his goods at, but did not have to; and it is represented in Figure C-1 as region BCP.

It is important to remember that the sum of consumer surplus and producer surplus represents total net benefits to society. Comparing consumer surplus to producer surplus as a measure of the change in net benefits from wilderness designation actually compares which component of society will receive (or lose) benefits from wilderness management. It does not compare total benefits to society under wilderness or nonwilderness management.

Wilderness is a nonmarket good in which the federal government is the principle supplier. The demand schedule could be represented by a downward sloping curve similar to the one shown in Figure C-1, and the supply curve coincides with the horizontal axis where wilderness is supplied at a zero price. At the present time the federal government is not in the business of producing and marketing wilderness for profit, and there is no minimum price at which the government will not supply wilderness. Therefore, the net benefits to society from recreation use of wilderness is equivalent to the consumer surplus and there is not any producer surplus.

Evaluating the economic value of wilderness through changes in net benefits to consumers and producers is useful in determining which component of society is deriving the benefit from changes in management. It does not show the total net benefits to society from wilderness or nonwilderness management. It is important to remember that when comparing consumer surplus from recreation use of wilderness to producer surplus from oil and gas or timber production in a wilderness area, that these two goods are under different demand curves.

Consumer and producer surplus would be used in the analysis to illustrate the tradeoffs in economic value to individual segments of society from wilderness or nonwilderness designation.



- BE Supply Curve
- AD Demand Curve
- Q Equilibrium Quantity
- P Equilibrium Price
- PC Price Line

Figure C-1

HYPOTHETICAL SUPPLY AND DEMAND SCHEDULE

These values must be projected throughout the life of the planning period used in the EIS, and discounted back to the first year of the planning period. Net benefits to consumers would increase from recreation, if wilderness designation results in an increased amount of visitor use above non-wilderness management. Net benefits to producers would decrease from wilderness designation, if resources such as oil and gas were withdrawn from development (resource use projections would be needed throughout the life of the planning period). Generally net benefits to society will show the gain or loss on the national level, while other economic factors such as employment, personal income, population, revenues, and taxes represent impacts and benefits occurring at the regional or local level.

INTERRELATIONSHIPS

On a local or regional level, economic factors such as employment and personal income would have the highest degree of significance, due to the financial value of these factors. Designation of a WSA as wilderness would generally preclude resource development from the area (although

some leases can be developed within a wilderness area). This would result in the loss of mineral or timber production from the area; and employment, personal income, and revenues generated from the production and sale of these resources would be foregone. This may or may not have a significant effect on the region, depending on the demand for these resources and alternate supplies available in the region. By not designating the area as wilderness, recreation use may be shifted to other areas.

Designation of a WSA as wilderness may increase recreation use, which would also have positive impacts on economic factors such as employment, personal income, retail sales, and sales taxes. The development that is foregone by wilderness development in the short term could be outweighed by positive impacts from increased recreational activities.

The interaction of recreation with other resources makes it difficult to assess the economic significance of wilderness designation without complete data for all affected resources. Therefore, the socioeconomic effects of wilderness designation in this document are discussed in qualitative not quantitative terms.

APPENDIX D

PUBLIC ATTITUDES TOWARD WILDERNESS

Attitudes and values of the wilderness use region clientele toward wilderness, reflects a desire for continued growth and a perception that there is an abundance of western wilderness.

One of the few studies available indicating public attitudes is Attitudes Toward Wilderness: A Limited Survey of Wilderness Attitudes in Selected Wyoming Communities (Warren and Warder 1978). This study was conducted by the University of Wyoming for BLM, shortly after the Forest Service's RARE II survey was completed in Wyoming. The survey included 175 persons and only the Big Piney community was represented from the Rock Springs District.

The study indicates that there is public antipathy toward additional wilderness in Wyoming, especially on BLM land. "The most common attitude state-wide was, 'We have enough'." However, the study uncovered several public misconceptions about wilderness that could significantly skew attitudes toward wilderness. For example, many persons thought that grazing and horse use in BLM wilderness areas would be phased out. Many felt that any wilderness would hurt the economy. Most favored a "multiple-use" management concept. Most felt that wilderness was "for the select few." Respondents felt "...they were misled and abused by the federal government in the RARE II proceedings. Most stated the BLM would have a difficult time receiving public support for wilderness proposals because of this" (Warren and Warder 1978).

The understandable public correlation of the RARE II process with the BLM wilderness study process could be interpreted (as the study suggests) to mean that BLM has the opportunity to avoid some of the public misconceptions involved in RARE I and RARE II. In the words of the Boston College Environmental Law Review (Rickart 1980): "Still, the RARE II WARS permitted the exercise of a great deal of personal discretion on the part of (FS) administrators. Increased efforts to subject regional judgments to a centralized review standard will help to bolster the credibility of the BLM survey."

In this light, not only are the national standards BLM established important for fair wilderness consideration, but public opinion expressed during the

wilderness study, and public comments expressed during the review of this environmental document, are also important. The Draft Wilderness EIS is being extensively circulated to obtain public comments and determine what public attitudes presently exist. Public attitudes, therefore, are still being determined. Although the remainder of this discussion refers to several studies on regional and national attitudes, the final study of public attitudes and final forum for decision making will be in Congress.

Another study of public attitudes in Montana, Idaho and Wyoming was conducted in 1978 by the Opinion Research Corporation (ORC 1978a-c). They indicated that in each state, a majority (52-58 percent) felt the current wilderness areas were adequate. The ORC surveys confirmed that confusion exists as to what a wilderness area is. It indicated that 64 percent favored energy development in potential wilderness areas, and when resurveyed in 1981, the figure had jumped to 74 percent. However, respondents also felt that other means should be used to meet America's energy needs in addition to present means (alternate fuels, use renewable sources, conservation).

Another survey, not by a professional polling firm, had an extensive mailing to every Wyoming voter. It was conducted in 1979 and in December 1981, by Wyoming's U.S. Congressman Cheney. The 1979 questionnaire asked for the Wyoming public's general feeling about creating more wilderness areas in Wyoming. The response was:

14%—As much qualified acreage as possible should be recommended for wilderness designation in order to protect the land.

39%—Some areas should be designated as wilderness, others should be open to more uses.

47%—There is already considerable wilderness acreage in Wyoming, and any additions should be kept to a minimum.

The 1981 questionnaire asked a slightly different question regarding wilderness. Over 12,000 Wyoming residents responded to: "A 1964 federal law allows development of oil and gas and other minerals that may exist beneath lands set aside by Congress as national wilderness areas, such as the Washakie Wilderness Area in Wyoming. Which

of the statements below best represents your own feeling about exploration and development activity in wilderness areas”?

58%—Energy and minerals are where you find them. While care should be taken to protect the environment, these resources need to be developed, even in wilderness areas.

41%—I am all for developing our energy resources, but not in wilderness areas. Congress was wrong to allow such activity and it should change the law so that energy development in wilderness areas would be prohibited.

One key link in the Wyoming public's mind is a natural association of wilderness with wildlife. Although Daniel Poole of the Wildlife Management Institute has said, “Wilderness is neither good nor bad for wildlife generally,” in Wyoming there is an understandable tendency to link the two values. The word “wilderness” is derived from the Old English for “wild animal,” but wildlife is not specifically cited within the 1964 Wilderness Act. In this wilderness use region, wildlife observation “nonconsumptive,” and hunting and fishing “consumptive,” are three of the highest natural resource and recreation values of the regional clientele. Impacts to these values can be pivotal to land management decisions.

Outside of the wilderness use region, national attitudes are ultimately outside the scope of this EIS, since they will be determined by Congress. However, some indications from polls and studies may be helpful. An ORC national sample in 1978 (ORC 1978d) showed that 55 percent felt that wilderness decisions should be made by the

citizens of the states affected; giving credence to BLM listening carefully to the attitudes within the wilderness use region. The 1981 ORC national polls and the 1981 Gallup polls indicated that the national public is still interested in environmental protection, but not at the expense of economic growth. A 1979 study by S. Kellert of Yale University confirms the importance of wildlife values in wilderness areas by asking for agreement or disagreement with this statement: “National resources must be developed even if the loss of wilderness results in much smaller wildlife populations.” Nationally 51 percent disagreed, in the Rocky Mountain region, 39 percent disagreed; but on specific issues (e.g., eagles), 91 percent felt protection was important. Seventy-five percent of the livestock producers in the Rocky Mountain Region disagreed, reflecting their long-time wildlife interest, typical of the Rock Springs wilderness use region.

Many of these national polls and studies are faced with the problem of lack of public information and understanding. In an Illinois doctoral thesis on wilderness attitudes (Young 1978), it was found that only 1.4 percent of the public visited wilderness areas each year. Reasons provided by the respondents for not visiting them were; “not enough time” and “did not know enough about them.”

In summary, public attitudes seem to favor a hard look by BLM before proposing additional wilderness. Careful consideration of public attitudes and values should be an integral part of any wilderness decisions, and, in the final analysis, public comment on BLM's study results, this EIS, and Congressional debate will make the ultimate determination on what the public wants.

APPENDIX E

OIL AND GAS DEVELOPMENT

Due to the significant role that oil and gas activities play in wilderness areas and their associated impacts, some guidelines on the anticipated sequence of activities, stipulations (see Figure E-1), and anticipated impacts are desirable. The sequence of operations in an oil and gas field can be separated into five phases:

1. Preliminary investigation over large areas via geophysical exploration, including geochemical surveys, airborne surveys, etc., to determine the likelihood of finding oil and gas. This phase causes very few impacts, depending upon the type of survey and unique circumstances.
2. Exploration, where wildcat well drilling takes place, and impacts associated with construction of access roads and installation of drilling facilities are experienced.
3. Development, after oil and gas is discovered and recovery is determined to be economically feasible. Impacts are the most significant in this phase, as development drilling takes place entailing construction of additional access roads, pipelines, and utility lines; and installation of separators, storage tanks, etc.
4. Production, when activities and consequently impacts, decline in intensity, but continue in the form of some continued drilling and development, maintenance of the production facilities, disposal of waste, and installation of recovery systems and communication facilities. Socioeconomic impacts stabilize as a more constant workforce is established.
5. Abandonment, when the field is abandoned, equipment is removed, wells plugged, and the surface is rehabilitated. Rehabilitation includes landscaping, reseeding, erosion control, and restoring the site as close as possible to a condition that does not preclude Congressional action designating the area as wilderness.

These impacts are long term, extending approximately 50 years from the period of preliminary investigation to completion of restoration activities. If oil or gas resources are discovered or expected to be discovered in a WSA, long-term impacts are projected in this EIS. In areas where BLM has estimated that low oil and gas potential and/or low industry interest exist, impacts for only the first two phases are projected, lasting until leases expire (no more than 10 years).

Department of Interior
Bureau of Land Management

WILDERNESS PROTECTION STIPULATION

By accepting this lease, the lessee acknowledges that the lands contained in this lease are being inventoried or evaluated for their wilderness potential by the Bureau of Land Management (BLM) under section 603 of the Federal Land Policy and Management Act of 1976, 90 Stat. 2743 (43 USC Sec. 1782):

Exploration or production activities which are not in conformity with section 603 may never be permitted. Expenditures in leases on which exploration drilling or production are not allowed will create no additional rights in the lease, and such leases will expire in accordance with law.

Activities will be permitted under the lease so long as BLM determines they will not impair wilderness suitability. This will be the case either until the BLM wilderness inventory process has resulted in a final wilderness inventory decision that an area lacks wilderness characteristics, or in the case of a wilderness study area until Congress has decided not to designate the lands included within this lease as wilderness. Activities will be considered nonimpairing if the BLM determines that they meet each of the following three criteria:

(a) It is temporary. This means that the use or activity may continue until the time when it must be terminated in order to meet the reclamation requirement of paragraphs (b) and (c) below. A temporary use that creates no new surface disturbance may continue unless Congress designates the area as wilderness, so long as it can easily and immediately be terminated at that time, if necessary to management of the area as wilderness.

(b) Any temporary impacts caused by the activity must, at a minimum, be capable of being reclaimed to a condition of being substantially unnoticeable in the wilderness study area (or inventory unit) as a whole by the time the Secretary of the Interior is scheduled to send his recommendations on that area to the President, and the operator will be required to reclaim the impacts to that standard by that date. If the wilderness study is postponed, the reclamation deadline will be extended accordingly. If the wilderness study is accelerated, the reclamation deadline will not be changed. A full schedule of wilderness studies will be developed by the Department upon completion of the intensive wilderness inventory. In the meantime, in areas not yet scheduled for wilderness study, the reclamation will be scheduled for completion within 4 years after approval of the activity. (Obviously, if and when the Interim Management Policy ceases to apply to an inventory unit dropped from wilderness review following a final wilderness inventory decision of the BLM State Director, the reclamation deadline previously specified will cease to apply.) The Secretary's schedule for transmitting his recommendations to the President will not be changed as a result of any unexpected inability to complete the reclamation by the specified date, and such inability will not constrain the Secretary's recommendation with respect to the area's suitability or unsuitability for preservation as wilderness.

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The reclamation will, to the extent practicable, be done while the activity is in progress. Reclamation will include the complete recontouring of all cuts and fills to blend with the natural topography, the replacement of topsoil, and the restoration of plant cover at least to the point where natural succession is occurring. Plant cover will be restored by means of reseeding or replanting, using species previously occurring in the area. If necessary, irrigation will be required. The reclamation schedule will be based on conservative assumptions with regard to growing conditions, so as to ensure that the reclamation will be complete, and the impacts will be substantially unnoticeable in the area as a whole, by the time the Secretary is scheduled to send his recommendations to the President. ("Substantially unnoticeable" is defined in Appendix F of the Interim Management Policy and Guidelines for Lands under Wilderness Review.)

(c) When the activity is terminated, and after any needed reclamation is complete, the area's wilderness values must not have been degraded so far, compared with the area's values for other purposes, as to significantly constrain the Secretary's recommendation with respect to the area's suitability or nonsuitability for preservation as wilderness. The wilderness values to be considered are those mentioned in section 2(c) of the Wilderness Act, including naturalness, outstanding opportunities for solitude or for primitive and unconfined recreation, and ecological, geological or other features of scientific, educational, scenic, or historical value. If all or any part of the area included within the leasehold estate is formally designated by Congress as wilderness, exploration and development operations taking place or to take place on that part of the lease will remain subject to the requirements of this stipulation, except as modified by the Act of Congress designating the land as wilderness. If Congress does not specify in such act how existing leases like this one will be managed, then the provisions of the Wilderness Act of 1964 will apply, as implemented by rules and regulations promulgated by the Department of the Interior.

DATE

SIGNATURE

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APPENDIX F

SOIL DESCRIPTIONS

The following soils are found in the Big Sandy Resource Area WSAs. Detailed information on soil locations is available for review in the Big Sandy Resource Area Offices.

Shallow soils (steep mountain slopes)—are mostly (80 percent) calcareous, formed on shale outcrops. Some of this (10 percent) is rock outcrop, with no soil present. A deep soil exists in this association, which is found under areas subject to deep snow drifting. Colluvial creep occurs in these soils.

Steep shallow soils (canyons and terrace scarps)—are soils formed on steep slopes of canyons and scarps of plateaus and basins. Most are shallow soils with sandy to silty textures. The soils are interspersed with rock outcrop debris slopes. Many of the soil areas are calcareous. Vegetation depends greatly on slope and aspect, with snow drifts greatly affecting moisture availability. Colluvial creep occurs extensively on these soils.

Steep shallow soils (canyons and ravines)—are the same as shallow soils (steep mountain slopes), except that they occur on slopes that are not as steep.

Shallow soils (residual uplands)—are characterized by thin soils formed on plateaus and upland mesas. They are all less than 18 inches deep with poorly developed profiles, and are calcareous throughout. Rock outcrop occupies approximately five percent of this association.

Shallow residual upland soils (alluvial fans)—are shallow soils on alluvial fans and residual uplands. Most (95 percent) are calcareous. All have sandy textures and have formed on alluvium or bedrock of sandstone or shale.

Shallow to deep soils (residual uplands)—are soils that are located between scarps and canyons on alluvial fans. Most (75 percent) are calcareous. They grade from deep (25 percent) and moderately deep (25 percent) to shallow (50 percent). All are formed on old alluvium and most are sandy textured.

Moderately deep soils (residual uplands)—are soils that have formed on plateaus and upland mesas. They are shallow to moderately deep, with sandy loam to sandy clay loam textures. Most soils (90 percent) in this association are calcareous, with the remaining component being a deep soil associated with snow drifting (developed by melt water).

Alkaline-saline soils—contain alkaline-saline salts. They characterize the margins of intermittent streams. All were formed by water deposition or flood debris. They are deep soils with sandy to clay loam textures and are often stratified. Some 20 percent of these soils are subirrigated, with highly alkaline surfaces often covered with precipitated salts. Alkaline-saline soils are characteristic of saline marshlands and stream margins. They occur on continually wet bottomlands. The lower profiles of these soils are anaerobic (no air is present).

Sandy soils (alluvial fans)—are sandy soils formed on gently sloping alluvial fans. They are calcareous, have deep profiles, and are well drained. The majority (80 percent) have formed on old alluvium, while the remainder were formed from recent water transported sediments.

Sandy saline soils (alluvial fans)—are sandy soils on alluvial fans that were formed from saline-alkaline sandy shales. These soils are both calcareous and alkaline-saline.

Heavy saline soils (alluvial fans)—are characterized by fine-textured (silt loam to clay loam) soils, formed on alluvial fans. These soils are calcareous and alkaline with deep profiles. Surface cracks occur when these soils dry, indicating a high shrink-swell potential. These soils are subject to severe channel erosion.

Dune land—is characterized by active shifting sand in dune areas that contain no vegetation. Because of the soil's unstable nature, its boundaries change from year to year.

Stabilized dunes—are the stabilized phase of dune land. This type of soil consists of dune land that has been stabilized by vegetation (sagebrush, rabbitbrush, and grasses). The hold that vegetation has on these sand dunes is very fragile.

The slightest disturbance to the vegetation (such as a vehicle passing over the area) can cause a blow-out (wind excavated depression).

Badlands—consist of rock outcrops, talus slopes, shale channels, and a small amount (30 percent) of very shallow soils. This soil type is found on very steep and broken lands along scarps, mesas, buttes, and upland rims.

Playas—are usually on level basins. Playas consist of depressions in which water gathers after a rain and is evaporated. Approximately 90 percent of the land surface is bare; however, small clumps of vegetation, primarily greasewood, with smaller amounts of alkali-tolerant grasses do occur. There is no runoff from playas, and the hazard of blowing soil is severe.

GLOSSARY

- ALKALINE-SALINE SOIL.** Generally, a soil having a pH value greater than 7.0 throughout most or all of the parts of it occupied by plant roots; and enough soluble salts to impair its productivity for plants.
- ALLUVIAL FAN.** A cone-shaped deposit of sediment from a stream, generally formed where streams issue from mountains upon the lowlands or where a faster moving stream meets a slower moving stream.
- ALLUVIUM.** Unconsolidated fragments from preexisting rocks or minerals that are moved from their place of origin and deposited by running water; including gravel, sand, silt, clay, and various mixtures of these materials.
- ANIMAL UNIT MONTH (AUM).** The forage required to support one cow and calf for one month (1,800 pounds on a 50 percent utilization basis); an AUM also is considered to be the forage required to support one horse, five sheep, five deer, one elk, one moose, or about fifteen pronghorn antelope.
- ANTICLINAL.** Inclined toward each other; an anticline is a unit of folded strata that is convex upward. In simple anticlines the beds are oppositely inclined, whereas in more complex types the limbs of strata may dip in the same direction.
- BARCHAN.** A crescent-shaped dune, with the convex side facing the wind; the gentler slope is on the convex side, and the steeper slope on the concave or leeward side. This dune type is most characteristic of the inland desert regions.
- CHECKERBOARD LAND PATTERN.** Alternating sections of federally owned lands with private or state lands for 20 miles on either side of the Union Pacific railroad in southwestern Wyoming. This pattern of land ownership looks like a checkerboard on maps using different colors for different land status.
- CLINOPTILOLITE.** A zeolite mineral occurring in the tuff of the Bridger Formation; it is a hydrous aluminosilicate formed by the alteration of volcanic tuffs and glasses. Zeolites are used extensively in Japan as absorbents in drying, in air separation, in water treatment, in the paper industry, as a dietary supplement for livestock, and as a soil conditioner.
- CONSUMPTIVE USE.** Refers to those recreation activities which consume natural resources. Hunting and fishing are regarded as consumptive recreation in that wildlife are consumed. Rockhounding is consumptive in that nonrenewable resources are removed.
- DECOLLEMENT.** Detachment structure of strata due to deformation, resulting in independent styles of deformation in the rocks above and below; associated with folding and with overthrusting.
- DOMES.** A rounded, domical dune.
- EOLIAN.** Formed or borne by the wind.
- ERODIBILITY.** The relative ease with which one soil erodes under specified conditions of slope as compared with other soils under the same conditions; applies to both sheet and gully erosion.
- EROSION SUSCEPTIBILITY CLASS.** A system for classifying erodibility which allows a site to be ranked on a scale of 0-100. Value classes are: 0-20, stable; 21-40, slight; 41-60, moderate; 61-80, critical; and 81-100, severe.
- FLUVIATILE.** Produced by river action; belonging to a river.
- GABION.** A mesh container used to confine rocks or stones and used to construct dams or to line stream channels.
- GEOSYNCLINAL.** Referring to a large, generally linear trough that subsided deeply throughout a long period of time in which a thick succession of stratified sediments and possibly extrusive volcanic rocks commonly accumulated.
- INTERMITTENT STREAM.** A stream or portion of a stream that flows only in direct response to precipitation. It receives little or no water from springs and is dry for a large part of the year.
- LACUSTRINE.** Produced by or formed in a lake or lakes.
- NONCONSUMPTIVE USE.** Refers to those recreation activities which do not consume natural resources or are relatively benign with regard to their impact on the environment. Hiking, backpacking, sightseeing, camping, nature study and photography, and picnicking are regarded as nonconsumptive recreation.

PARABOLIC. A dune shaped like a parabola (approximately bowl-shaped), with the concave side toward the wind.

PERENNIAL STREAM. A stream or reach of a stream that flows continuously throughout the year, and whose upper surface generally stands lower than the water table in the region adjoining the stream. Also known as permanent or live stream.

PLAYA. The usually dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those occurring on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation runoff events, forming broad, shallow sheets of water which quickly gather and almost as quickly evaporate.

RARE SPECIES. Wildlife species whose populations are consistently small and widely dispersed, or whose ranges are restricted to a few localities, such that any appreciable reduction in numbers, habitat availability, or habitat condition might lead toward extinction.

RIPARIAN. Situated on or pertaining to the bank of a river, stream, or other body of water. Normally used to refer to the plants of all types that grow rooted in the water table or streams, ponds, springs, etc.

SENSITIVE SPECIES. Wildlife species whose numbers are declining so rapidly that official listing as threatened or endangered pursuant to Section 4 of the Endangered Species Act may become necessary as a conservation measure. Declines may be due to one or more factors, including: destruction, modification, or curtailment of the species' habitat or range; overutilization for commercial, sporting, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; and/or other natural or manmade factors adversely affecting the species' continued existence.

STABILIZED DUNE. A dune protected from further wind action by a cover of vegetation or by cementation of the sand; known also as a "fixed" or "anchored" dune.

STABILITY. The extent to which vertical or horizontal mixing, or movement, of air layers occurs; expressed generally as stable, unstable, or neutral, the atmospheric stability class is one of the key dispersion factors. Under stable conditions, vertical mixing is suppressed; i.e., a mass of air tends to remain in the same position rather than the normal horizontal or vertical movements. Unstable conditions

enhance vertical turbulence; i.e., a mass of air forced upward will continue to rise and a mass of air forced downward will continue to sink. Under neutral conditions, a mass of air forced upward would have no vertical acceleration.

TERRACE. A step-like surface, bordering a valley floor or shoreline, that represents the former position of an alluvial plain, or lake or sea shore. The term usually applies to both the relatively flat summit surface (platform), that was cut or built by stream or wave action, and the steeper descending slope (scarp), graded to the lower base level of erosion.

TERTIARY. The first period of the Cenozoic Era of geologic time, following the Mesozoic Era of preceding the Quaternary (approximately from 65 million to 2 million years ago).

TOTAL SUSPENDED PARTICULATES (TSP). The total predicted pollutant concentrations, except water, in uncombined form that are airborne and exist as a liquid or solid at standard conditions.

THRUST BELT. An intensely faulted belt of mountain ranges. Thrust faults are low angle ruptures in the earth's crust that relieved deep compressional forces. The surface expression of this tectonic activity is westward dipping formations exposed in numerous ridges or mountain ranges. Each ridge moved horizontally and vertically to its position along at least one thrust fault.

TRANSVERSE. A strongly asymmetrical dune ridge extending transverse to the direction of the dominant sand-moving winds; the leeward slope stands at or near the angle of repose of sand if the dune is active, while the windward slope is comparatively gentle.

TRONA. A naturally occurring sodium sesquicarbonate that was formed in ancient saline lakes. It is generally honey or light brown in color, depending upon the impurities present in the mineral; and it is the major natural source of soda ash.

TUFF. A rock formed of compacted volcanic fragments, generally smaller than four millimeters in diameter.

UNDERSTORY SPECIES. That portion of a plant community which grows underneath taller plants located on the same site.

VARMINT. An animal that is considered a pest or a nuisance to man because (1) it occurs in great numbers and is difficult to control or (2) it competes at a particular time or place with man or his domestic animals. Examples are prairie dogs and coyotes.

VISITOR-DAY. A day in which the visitor-hours contained therein have been spent by a person in any activity except those which are part of or incidental to the pursuit of a gainful occupation. Twelve visitor-hours aggregated by one or more persons constitute a visitor-day.

WITHDRAWAL. An action that restricts the use of public lands and segregates the lands from some or all of the public land or mineral laws.

1. The first part of the paper discusses the importance of maintaining accurate records of all transactions.

2. It then goes on to describe the various methods used to collect and analyze data, including interviews, surveys, and focus groups.

3. The next section presents the results of the study, showing that there is a significant correlation between the use of records and the accuracy of financial reporting.

4. Finally, the paper concludes by discussing the implications of these findings for future research and for the development of accounting systems.

5. The authors also provide a list of references and a summary of the key points of the study.

6. In addition, they include a table of the data used in the study, which shows the results of the various tests and analyses.

7. The paper also includes a section on the limitations of the study, which acknowledges that the results may not be generalizable to all situations.

8. Finally, the authors provide a list of recommendations for future research, which includes the need for more data and for more rigorous testing.

9. The paper concludes with a statement of the authors' appreciation for the support of the National Science Foundation and the University of California.

10. The authors also thank the many individuals who assisted them in the collection and analysis of the data.

11. Finally, they provide a list of the authors' addresses and a statement of their current affiliations.

12. The paper is published in the Journal of Accounting and Finance, Volume 12, Number 1, 1975.

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R'S CARD

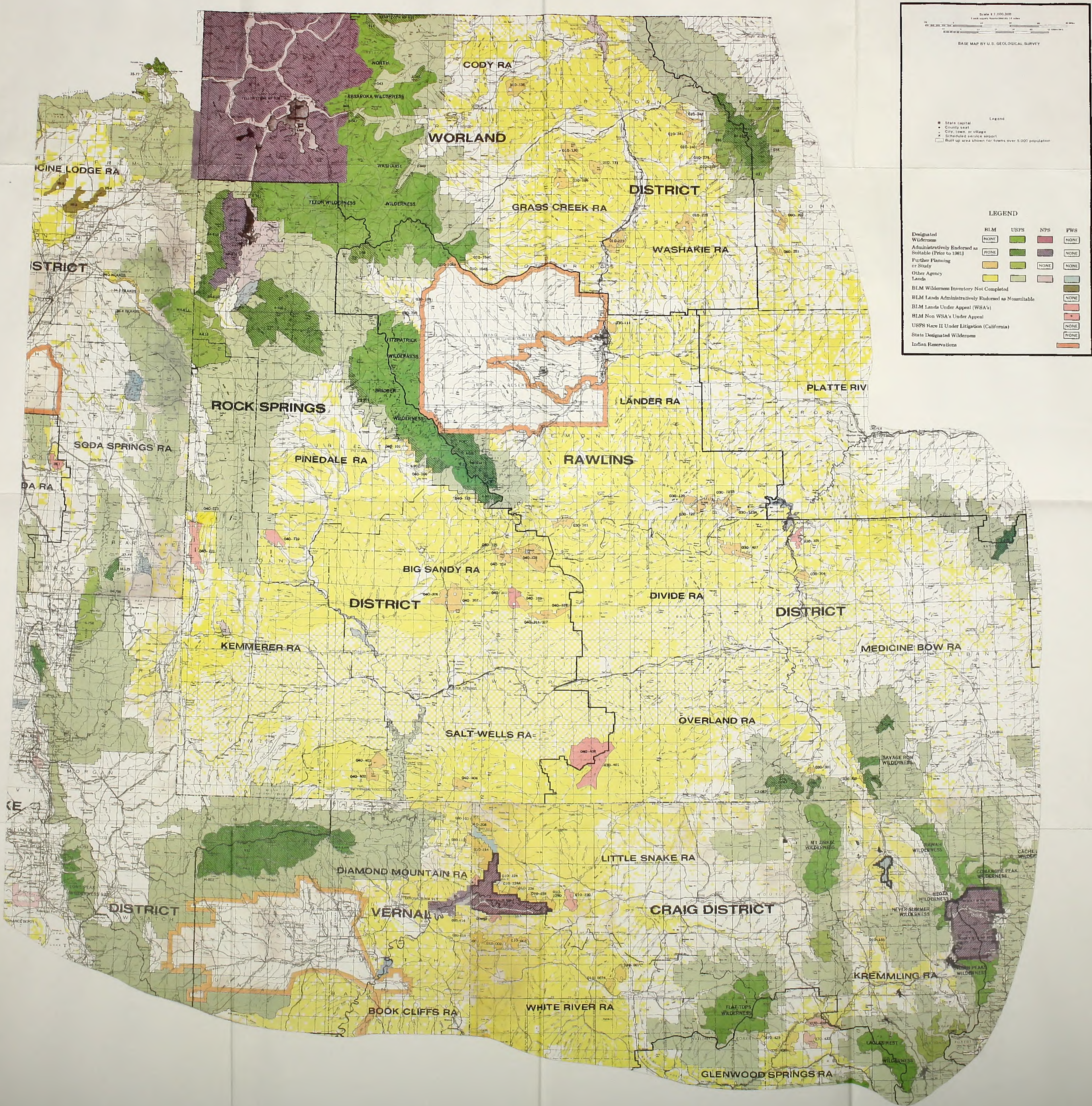
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	SC 344	2-13-90

(Continued on reverse)

WILDERNESS USE REGION MAP





**U.S. Department of the Interior
Bureau of Land Management
Rock Springs District, Wyoming**